



1/53

TCGCCCCACGCGTCCGCACCGCCGCCAGGCAAGGCCGCCCTGCCTGGG
↑SEQ.ID NO: 1

SEQ.ID NO: 2 → M A G G R G A P 8
CGCAGCGCTGCC ATG GCT GGG GGC CGT GGG GCC CCC 24
SEQ.ID NO: 3 ↑ →

G R G R D E P P E S Y 19
GGG CGC GGC CGG GAC GAG CCT CCG GAG AGC TAC 57

P Q R Q D H E L Q A L 30
CCG CAA CGA CAG GAC CAC GAG CTA CAG GCC CTG 90

E A I Y G A D F Q D L 41
GAG GCC ATC TAC GGC GCG GAC TTC CAA GAC CTG 123

R P D A C G P V K E P 52
CGG CCG GAC GCT TGC GGA CCG GTC AAA GAG CCC 156

P E I N L V L Y P Q G 63
CCT GAA ATC AAT TTA GTT TTG TAC CCT CAA GGC 189

L T G E E V Y V K V D 74
CTA ACT GGT GAA GAA GTA TAT GTA AAA GTG GAT 222

L R V K C P P T Y P D 85
TTG AGG GTT AAA TGC CCA CCT ACC TAT CCA GAT 255

V V P E I E L K N A K 96
GTA GTT CCT GAA ATA GAG TTA AAA AAT GCC AAA 288

G L S N E S V N L L K 107
GGT CTA TCA AAT GAA AGT GTC AAT TTG TTA AAA 321

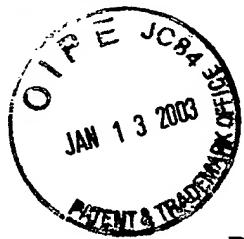
S R L E E L A K K H C 118
TCT CGC CTA GAA GAA CTG GCC AAG AAA CAC TGT 354

G E V M I F E L A Y H 129
GGG GAG GTG ATG ATC TTT GAA CTG GCT TAC CAC 387

V Q S F L S E H N K P 140
GTG CAG TCA TTT CTC AGC GAG CAT AAC AAG CCC 420

APPROVED	O.G. FIG.	CLASS	SUBCLASS
BY	DRAFTSMAN		

FIG. 1A



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P	P	K	S	F	H	E	E	M	L	E	151
CCT	CCC	AAG	TCT	TTT	CAT	GAA	GAA	ATG	CTG	GAA	453
R	R	A	Q	E	E	Q	Q	R	L	L	162
AGG	CGG	GCT	CAG	GAG	GAG	CAG	CAG	AGG	CTG	TTG	486
E	A	K	R	K	E	E	Q	E	Q	R	173
GAG	GCC	AAG	CGG	AAA	GAA	GAG	CAG	GAG	CAA	CGT	519
E	I	L	H	E	I	Q	R	R	K	E	184
GAA	ATC	CTG	CAT	GAG	ATT	CAG	AGA	AGG	AAA	GAA	552
E	I	K	E	E	K	K	R	K	E	M	195
GAG	ATA	AAA	GAA	GAG	AAA	AAA	AGG	AAA	GAA	ATG	585
A	K	Q	E	R	L	E	I	A	S	L	206
GCT	AAG	CAG	GAA	CGT	TTG	GAA	ATT	GCT	AGT	TTG	618
S	N	Q	D	H	T	S	K	K	D	P	217
TCA	AAC	CAA	GAT	CAT	ACC	TCT	AAG	AAG	GAC	CCA	651
G	G	H	R	T	A	A	I	L	H	G	228
GGA	GGA	CAC	AGA	ACG	GCT	GCC	ATT	CTA	CAT	GGA	684
G	S	P	D	F	V	G	N	G	K	H	239
GGC	TCT	CCT	GAC	TTT	GTA	GGA	AAT	GGT	AAA	CAT	717
R	A	N	S	S	G	R	S	R	R	E	250
CGG	GCA	AAC	TCC	TCA	GGA	AGG	TCT	AGG	CGA	GAA	750
R	Q	Y	S	V	C	N	S	E	D	S	261
CGT	CAG	TAT	TCT	GTA	TGT	AAT	AGT	GAA	GAT	TCT	783
P	G	S	C	E	I	L	Y	F	N	M	272
CCT	GGC	TCT	TGT	GAA	ATT	CTG	TAT	TTC	AAT	ATG	816
G	S	P	D	Q	L	M	V	H	K	G	283
GGG	AGT	CCT	GAT	CAG	CTC	ATG	GTG	CAC	AAA	GGG	849

FIG. 1B

JAN 13 2003

APPROVED	C.C. F.C.
CLASS	SUBCLASS
BY DRAFTSMAN	

K	C	I	G	S	D	E	Q	L	G	K		294
AAA	TGT	ATT	GGC	AGT	GAT	GAA	CAA	CTT	GGA	AAA		882
L	V	Y	N	A	L	E	T	A	T	G		305
TTA	GTC	TAC	AAT	GCT	TTG	GAA	ACA	GCC	ACT	GGT		915
G	F	V	L	L	Y	E	W	V	L	Q		316
GGC	TTT	GTC	TTG	TTG	TAT	GAG	TGG	GTC	CTT	CAG		948
W	Q	K	K	M	G	P	F	L	T	S		327
TGG	CAG	AAA	AAA	ATG	GGT	CCA	TTC	CTT	ACC	AGT		981
Q	E	K	E	K	I	D	K	C	K	K		338
CAA	GAA	AAA	GAG	AAG	ATT	GAT	AAG	TGC	AAA	AAG		1014
Q	I	Q	G	T	E	T	E	F	N	S		349
CAG	ATT	CAA	GGA	ACA	GAA	ACA	GAA	TTC	AAC	TCA		1047
L	V	K	L	S	H	P	N	V	V	R		360
CTG	GTA	AAA	TTG	AGC	CAT	CCA	AAT	GTA	GTA	CGC		1080
Y	L	A	M	N	L	K	E	Q	D	D		371
TAC	CTT	GCA	ATG	AAT	CTC	AAA	GAG	CAA	GAC	GAC		1113
S	I	V	V	D	I	L	V	E	H	I		382
TCC	ATC	GTG	GTG	GAC	ATT	TTA	GTG	GAG	CAC	ATT		1146
S	G	V	S	L	A	A	H	L	S	H		393
AGT	GGG	GTC	TCT	CTT	GCT	GCA	CAC	CTG	AGC	CAC		1179
S	G	P	I	P	V	H	Q	L	R	R		404
TCA	GGC	CCC	ATC	CCT	GTG	CAT	CAG	CTT	CGC	AGG		1212
Y	T	A	Q	L	L	S	G	L	D	Y		415
TAC	ACA	GCT	CAG	CTC	CTG	TCA	GGC	CTT	GAT	TAT		1245
L	H	S	N	S	V	V	H	K	V	L		426
CTG	CAC	AGC	AAT	TCT	GTG	GTG	CAT	AAG	GTC	CTG		1278



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S	A	S	N	V	L	V	D	A	E	G	437
AGT	GCA	TCT	AAT	GTC	TTG	GTG	GAT	GCA	GAA	GGC	1311
T	V	K	I	T	D	Y	S	I	S	K	448
ACC	GTC	AAG	ATT	ACG	GAC	TAT	AGC	ATT	TCT	AAG	1344
R	L	A	D	I	C	K	E	D	V	F	459
CGC	CTC	GCA	GAC	ATT	TGC	AAG	GAG	GAT	GTG	TTT	1377
E	Q	T	R	V	R	F	S	D	N	A	470
GAG	CAA	ACC	CGA	GTT	CGT	TTT	AGT	GAC	AAT	GCT	1410
L	P	Y	K	T	G	K	K	G	D	V	481
CTG	CCT	TAT	AAA	ACG	GGG	AAG	AAA	GGA	GAT	GTT	1443
W	R	L	G	L	L	L	S	L	S	492	
TGG	CGT	CTT	GGC	CTT	CTG	CTG	TCC	CTC	AGC	1476	
Q	G	Q	E	C	G	E	Y	P	V	T	503
CAA	GGA	CAG	GAA	TGT	GGA	GAG	TAC	CCT	GTG	ACC	1509
I	P	S	D	L	P	A	D	F	Q	D	514
ATC	CCT	AGT	GAC	TTA	CCA	GCT	GAC	TTT	CAA	GAT	1542
F	L	K	K	C	V	C	L	D	D	K	525
TTT	CTA	AAG	AAA	TGT	GTG	TGC	TTG	GAT	GAC	AAG	1575
E	R	W	S	P	Q	Q	L	L	K	H	536
GAA	AGA	TGG	AGT	CCC	CAG	CAG	TTG	TTG	AAA	CAC	1608
S	F	I	N	P	Q	P	K	M	P	L	547
AGC	TTT	ATA	AAT	CCC	CAG	CCA	AAA	ATG	CCT	CTA	1641
V	E	Q	S	P	E	D	S	G	G	Q	558
GTG	GAA	CAA	AGT	CCT	GAA	GAT	TCT	GGA	GGA	CAA	1674
D	Y	V	E	T	V	I	P	S	N	R	569
GAT	TAT	GTT	GAG	ACT	GTT	ATT	CCT	AGC	AAC	CGG	1707
L	P	S	A	A	F	F	S	E	T	Q	580
CTA	CCC	AGT	GCT	GCC	TTC	TTT	AGT	GAG	ACA	CAG	1740

FIG. 1D



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R	Q	F	S	R	Y	F	I	E	F	E	591
AGA	CAG	TTT	TCC	CGA	TAC	TTC	ATT	GAG	TTT	GAA	1773
E	L	Q	L	L	G	K	G	A	F	G	602
GAA	TTA	CAA	CTT	CTT	GGT	AAA	GGA	GCT	TTT	GGA	1806
A	V	I	K	V	Q	N	K	L	D	G	613
GCT	GTC	ATC	AAG	GTG	CAG	AAC	AAG	TTG	GAC	GGC	1839
C	C	Y	A	V	K	R	I	P	I	N	624
TGC	TGC	TAC	GCA	GTG	AAG	CGC	ATC	CCC	ATC	AAC	1872
P	A	S	R	Q	F	R	R	I	K	G	635
CCG	GCC	AGC	CGG	CAG	TTC	CGC	AGG	ATC	AAG	GGC	1905
E	V	T	L	L	S	R	L	H	H	E	646
GAA	GTG	ACA	CTG	CTG	TCA	CGG	CTG	CAC	CAT	GAG	1938
N	I	V	R	Y	Y	N	A	W	I	E	657
AAC	ATT	GTG	CGC	TAC	TAC	AAC	GCC	TGG	ATC	GAG	1971
R	H	E	R	P	A	G	P	G	T	P	668
CGG	CAC	GAG	CGG	CCG	GCG	GGA	CCG	GGG	ACG	CCG	2004
P	P	D	S	G	P	L	A	K	D	D	679
CCC	CCG	GAC	TCC	GGG	CCC	CTG	GCC	AAG	GAT	GAC	2037
R	A	A	R	G	Q	P	A	S	D	T	690
CGA	GCT	GCA	CGC	GGG	CAG	CCG	GCG	AGC	GAC	ACA	2070
D	G	L	D	S	V	E	A	A	A	P	701
GAC	GGC	CTG	GAC	AGC	GTA	GAG	GCC	GCC	GCG	CCG	2103
P	P	I	L	S	S	S	V	E	W	S	712
CCA	CCC	ATC	CTC	AGC	AGC	TCG	GTG	GAG	TGG	AGC	2136
T	S	G	E	R	S	A	S	A	R	F	723
ACT	TCG	GGC	GAG	CGC	TCG	GCC	AGT	GCC	CGT	TTC	2169

FIG. 1E



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P	A	T	G	P	G	S	S	D	D	E	734
CCC	GCC	ACC	GGC	CCG	GGC	TCC	AGC	GAT	GAC	GAG	2202
D	D	D	E	D	E	H	G	G	V	F	745
GAC	GAC	GAC	GAG	GAC	GAG	CAC	GGT	GGC	GTC	TTC	2235
S	Q	S	F	L	P	A	S	D	S	E	756
TCC	CAG	TCC	TTC	CTG	CCT	GCT	TCA	GAT	TCT	GAA	2268
S	D	I	I	F	D	N	E	D	E	N	767
AGT	GAT	ATT	ATC	TTT	GAC	AAT	GAA	GAT	GAG	AAC	2301
S	K	S	Q	N	Q	D	E	D	C	N	778
AGT	AAA	AGT	CAG	AAT	CAG	GAT	GAA	GAT	TCC	AAT	2334
E	K	N	G	C	H	E	S	E	P	S	789
GAA	AAG	AAT	GGC	TGC	CAT	GAA	AGT	GAG	CCA	TCA	2367
V	T	T	E	A	V	H	Y	L	Y	I	800
GTG	ACG	ACT	GAG	GCT	GTG	CAC	TAC	CTA	TAC	ATC	2400
Q	M	E	Y	C	E	K	S	T	L	R	811
CAG	ATG	GAG	TAC	TGT	GAG	AAG	AGC	ACT	TTA	CGA	2433
D	T	I	D	Q	G	L	Y	R	D	T	822
GAC	ACC	ATT	GAC	CAG	GGA	CTG	TAT	CGA	GAC	ACC	2466
V	R	L	W	R	L	F	R	E	I	L	833
GTC	AGA	CTC	TGG	AGG	CTT	TTT	CGA	GAG	ATT	CTG	2499
D	G	L	A	Y	I	H	E	K	G	M	844
GAT	GGA	TTA	GCT	TAT	ATC	CAT	GAG	AAA	GGA	ATG	2532
I	H	R	D	L	K	P	V	N	I	F	855
ATT	CAC	CGG	GAT	TTG	AAG	CCT	GTC	AAC	ATT	TTT	2565
L	D	S	D	D	H	V	K	I	G	D	866
TTG	GAT	TCT	GAT	GAC	CAT	GTG	AAA	ATA	GGT	GAT	2598

FIG. 1F

APPROVED : U.S. PTO
CLASS : SUBCLASS
BY DRAFTSMAN



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F	G	L	A	T	D	H	L	A	F	S	877
TTT	GGT	TTG	GCG	ACA	GAC	CAT	CTA	GCC	TTT	TCT	2631
A	D	S	K	Q	D	D	Q	T	G	D	888
GCT	GAC	AGC	AAA	CAA	GAC	GAT	CAG	ACA	GGA	GAC	2664
L	I	K	S	D	P	S	G	H	L	T	899
TTG	ATT	AAG	TCA	GAC	CCT	TCA	GGT	CAC	TTA	ACT	2697
G	M	V	G	T	A	L	Y	V	S	P	910
GGG	ATG	GTT	GGC	ACT	GCT	CTC	TAT	GTA	AGC	CCA	2730
E	V	Q	G	S	T	K	S	A	Y	N	921
GAG	GTC	CAA	GGA	AGC	ACC	AAA	TCT	GCA	TAC	AAC	2763
Q	K	V	D	L	F	S	L	G	I	I	932
CAG	AAA	GTG	GAT	CTC	TTC	AGC	CTG	GGA	ATT	ATC	2796
F	F	E	M	S	Y	H	P	M	V	T	943
TTC	TTT	GAG	ATG	TCC	TAT	CAC	CCC	ATG	GTC	ACG	2829
A	S	E	R	I	F	V	L	N	Q	L	954
GCT	TCA	GAA	AGG	ATC	TTT	GTT	CTC	AAC	CAA	CTC	2862
R	D	P	T	S	P	K	F	P	E	D	965
AGA	GAT	CCC	ACT	TCG	CCT	AAG	TTT	CCA	GAA	GAC	2895
F	D	D	G	E	H	A	K	Q	K	S	976
TTT	GAC	GAT	GGA	GAG	CAT	GCA	AAG	CAG	AAA	TCA	2928
V	I	S	W	L	L	N	H	D	P	A	987
GTC	ATC	TCC	TGG	CTG	TTG	AAC	CAC	GAT	CCA	GCA	2961
K	R	P	T	A	T	E	L	L	K	S	998
AAA	CGG	CCC	ACA	GCC	ACA	GAA	CTG	CTC	AAG	AGT	2994
E	L	L	P	P	P	Q	M	E	E	S	1009
GAG	CTG	CTG	CCC	CCA	CCC	CAG	ATG	GAG	GAG	TCA	3027
E	L	H	E	V	L	H	H	T	L	T	1020
GAG	CTG	CAT	GAA	GTG	CTG	CAC	CAC	ACG	CTG	ACC	3060

FIG. 1G



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N	V	D	G	K	A	Y	R	T	M	M	1031
AAC	GTG	GAT	GGG	AAG	GCC	TAC	CGC	ACC	ATG	ATG	3093
A	Q	I	F	S	Q	R	I	S	P	A	1042
GCC	CAG	ATC	TTC	TCG	CAG	CGC	ATC	TCC	CCT	GCC	3126
I	D	Y	T	Y	D	S	D	I	L	K	1053
ATC	GAT	TAC	ACC	TAT	GAC	AGC	GAC	ATA	CTG	AAG	3159
G	N	F	S	I	R	T	A	K	M	Q	1064
GGC	AAC	TTC	TCA	ATC	CGT	ACA	GCC	AAG	ATG	CAG	3192
Q	H	V	C	E	T	I	I	R	I	F	1075
CAG	CAT	GTG	TGT	GAA	ACC	ATC	ATC	CGC	ATC	TTT	3225
K	R	H	G	A	V	Q	L	C	T	P	1086
AAA	AGA	CAT	GGA	GCT	GTT	CAG	TTG	TGT	ACT	CCA	3258
L	L	L	P	R	N	R	Q	I	Y	E	1097
CTA	CTG	CTT	CCC	CGA	AAC	AGA	CAA	ATA	TAT	GAG	3291
H	N	E	A	A	L	F	M	D	H	S	1108
CAC	AAC	GAA	GCT	GCC	CTA	TTC	ATG	GAC	CAC	AGC	3324
G	M	L	V	M	L	P	F	D	L	R	1119
GGG	ATG	CTG	GTG	ATG	CTT	CCT	TTT	GAC	CTG	CGG	3357
I	P	F	A	R	Y	V	A	R	N	N	1130
ATC	CCT	TTT	GCA	AGA	TAT	GTG	GCA	AGA	AAT	AAT	3390
I	L	N	L	K	R	Y	C	I	E	R	1141
ATA	TTG	AAT	TTA	AAA	CGA	TAC	TGC	ATA	GAA	CGT	3423
V	F	R	P	R	K	L	D	R	F	H	1152
GTG	TTC	AGG	CCG	CGC	AAG	TTA	GAT	CGA	TTT	CAT	3456
P	K	E	L	L	E	C	A	F	D	I	1163
CCC	AAA	GAA	CTT	CTG	GAG	TGT	GCA	TTT	GAT	ATT	3489

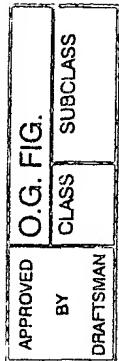
FIG. 1H



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V	T	S	T	T	N	S	F	L	P	T	1174
GTC	ACT	TCT	ACC	ACC	AAC	AGC	TTT	CTG	CCC	ACT	3522
A	E	I	I	Y	T	I	Y	E	I	I	1185
GCT	GAA	ATT	ATC	TAC	ACT	ATC	TAT	GAA	ATC	ATC	3555
Q	E	F	P	A	L	Q	E	R	N	Y	1196
CAA	GAG	TTT	CCA	GCA	CTT	CAG	GAA	AGA	AAT	TAC	3588
S	I	Y	L	N	H	T	M	L	L	K	1207
AGT	ATT	TAT	TTG	AAC	CAT	ACC	ATG	TTA	TTG	AAA	3621
A	I	L	L	H	C	G	I	P	E	D	1218
GCA	ATA	CTC	TTA	CAC	TGT	GGG	ATC	CCA	GAA	GAT	3654
K	L	S	Q	V	Y	I	I	L	Y	D	1229
AAA	CTC	AGT	CAA	GTC	TAC	ATT	ATT	CTG	TAT	GAT	3687
A	V	T	E	K	L	T	R	R	E	V	1240
GCT	GTG	ACA	GAG	AAG	CTG	ACG	AGG	AGA	GAA	GTG	3720
E	A	K	F	C	N	L	S	L	S	S	1251
GAA	GCT	AAA	TTT	TGT	AAT	CTG	TCT	TTG	TCT	TCT	3753
N	S	L	C	R	L	Y	K	F	I	E	1262
AAT	AGT	CTG	TGT	CGA	CTC	TAC	AAG	TTT	ATT	GAA	3786
Q	K	G	D	L	Q	D	L	M	P	T	1273
CAG	AAG	GGA	GAT	TTG	CAA	GAT	CTT	ATG	CCA	ACA	3819
I	N	S	L	I	K	Q	K	T	G	I	1284
ATA	AAT	TCA	TTA	ATA	AAA	CAG	AAA	ACA	GGT	ATT	3852
A	Q	L	V	K	Y	G	L	K	D	L	1295
GCA	CAG	TTG	GTG	AAG	TAT	GGC	TTA	AAA	GAC	CTA	3885
E	E	V	V	G	L	L	K	K	L	G	1306
GAG	GAG	GTT	GTT	GGA	CTG	TTG	AAG	AAA	CTC	GGC	3918

FIG. 1I





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I	K	L	Q	V	L	I	N	L	G	L		1317
ATC	AAG	TTA	CAG	GTC	TTG	ATC	AAT	TTG	GGC	TTG		3951
V	Y	K	V	Q	Q	H	N	G	I	I		1328
GTT	TAC	AAG	GTG	CAG	CAG	CAC	AAT	GGA	ATC	ATC		3984
F	Q	F	V	A	F	I	K	R	R	Q		1339
TTC	CAG	TTT	GTG	GCT	TTC	ATC	AAA	CGA	AGG	CAA		4017
R	A	V	P	E	I	L	A	A	G	G		1350
AGG	GCT	GTA	CCT	GAA	ATC	CTC	GCA	GCT	GGA	GGC		4050
R	Y	D	L	L	I	P	Q	F	R	G		1361
AGA	TAT	GAC	CTG	CTG	ATT	CCC	CAG	TTT	AGA	GGG		4083
P	Q	A	L	G	P	V	P	T	A	I		1372
CCA	CAA	GCT	CTG	GGG	CCA	GTT	CCC	ACT	GCC	ATT		4116
G	V	S	I	A	I	D	K	I	S	A		1383
GGG	GTC	AGC	ATA	GCT	ATA	GAC	AAG	ATA	TCT	GCT		4149
A	V	L	N	M	E	E	S	V	T	I		1394
GCT	GTC	CTC	AAC	ATG	GAG	GAA	TCT	GTT	ACA	ATA		4182
S	S	C	D	L	L	V	V	S	V	G		1405
AGC	TCT	TGT	GAC	CTC	CTG	GTT	GTA	AGT	GTT	GGT		4215
Q	M	S	M	S	R	A	I	N	L	T		1416
CAG	ATG	TCT	ATG	TCC	AGG	GCC	ATC	AAC	CTA	ACC		4248
Q	K	L	W	T	A	G	I	T	A	E		1427
CAG	AAA	CTC	TGG	ACA	GCA	GGC	ATC	ACA	GCA	GAA		4281
I	M	Y	D	W	S	Q	S	Q	E	E		1438
ATC	ATG	TAC	GAC	TGG	TCA	CAG	TCC	CAA	GAG	GAA		4314
L	Q	E	Y	C	R	H	H	E	I	T		1449
TTA	CAA	GAG	TAC	TGC	AGA	CAT	CAT	GAA	ATC	ACC		4347
Y	V	A	L	V	S	D	K	E	G	S		1460
TAT	GTG	GCC	CTT	GTC	TCG	GAT	AAA	GAA	GGA	AGC		4380

FIG. 1J

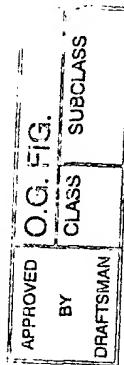
APPROVED	U.S. FIG.
BY	SUBCLASS
DRAFTSMAN	CLASS



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H	V	K	V	K	S	F	E	K	E	R	1471
CAT	GTC	AAG	GTT	AAG	TCT	TTC	GAG	AAG	GAA	AGG	4413
Q	T	E	K	R	V	L	E	T	E	L	1482
CAG	ACA	GAG	AAG	CGT	GTG	CTG	GAG	ACT	GAA	CTT	4446
V	D	H	V	L	Q	K	L	R	T	K	1493
GTG	GAC	CAT	GTA	CTG	CAG	AAA	CTG	AGG	ACT	AAA	4479
V	T	D	E	R	N	G	R	E	A	S	1504
GTC	ACT	GAT	GAA	AGG	AAT	GGC	AGA	GAA	GCT	TCC	4512
D	N	L	A	V	Q	N	L	K	G	S	1515
GAT	AAT	CTT	GCA	GTG	CAA	AAT	CTG	AAG	GGG	TCA	4545
F	S	N	A	S	G	L	F	E	I	H	1526
TTT	TCT	AAT	GCT	TCA	GGT	TTG	TTT	GAA	ATC	CAT	4578
G	A	T	V	V	P	I	V	S	V	L	1537
GGA	GCA	ACA	GTG	GTT	CCC	ATT	GTG	AGT	GTG	CTA	4611
A	P	E	K	L	S	A	S	T	R	R	1548
GCC	CCG	GAG	AAG	CTG	TCA	GCC	AGC	ACT	AGG	AGG	4644
R	Y	E	T	Q	V	Q	T	R	L	Q	1559
CGC	TAT	GAA	ACT	CAG	GTA	CAA	ACT	CGA	CTT	CAG	4677
T	S	L	A	N	L	H	Q	K	S	S	1570
ACC	TCC	CTT	GCC	AAC	TTA	CAT	CAG	AAA	AGC	AGT	4710
E	I	E	I	L	A	V	D	L	P	K	1581
GAA	ATT	GAA	ATT	CTG	GCT	GTG	GAT	CTA	CCC	AAA	4743
E	T	I	L	Q	F	L	S	L	E	W	1592
GAA	ACA	ATA	TTA	CAG	TTT	TTA	TCA	TTA	GAG	TGG	4776
D	A	D	E	Q	A	F	N	T	T	V	1603
GAT	GCT	GAT	GAA	CAG	GCA	TTT	AAC	ACA	ACT	GTG	4809

FIG. 1K





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K	Q	L	L	S	R	L	P	K	Q	R	1614
AAG	CAG	CTG	CTG	TCA	CGC	CTG	CCA	AAG	CAA	AGA	4842
Y	L	K	L	V	C	D	E	I	Y	N	1625
TAC	CTC	AAA	TTA	GTC	TGT	GAT	GAA	ATT	TAT	AAC	4875
I	K	V	E	K	K	V	S	V	L	F	1636
ATC	AAA	GTA	GAA	AAA	AAG	GTG	TCT	GTG	CTA	TTT	4908
L	Y	S	Y	R	D	D	Y	Y	R	I	1647
CTG	TAC	AGC	TAT	AGA	GAT	GAC	TAC	TAC	AGA	ATC	4941
L	F	*	1650								
TTA	TTT	TA	4950	← SEQ. ID NO: 3							

CCCTAAAGAACTGTCGTTAACCTCATTCAAACAGACAGAGGGCTTATACTG
 GAATAATGGAATGTTGTACATTCATCATAATTAAAATTAAATTCTAAGA
 AGAGGCTGGGTGCAGTGGCTCACACCTTAATCCCAGCACTTGGGAAGC
 CAAGGCAGGAAGACTGCTTGAACACCAGGAGTTGAGACCCAGCCTGAGCAA
 CAAAGCAAGACCCATCTCTATAAAACTAAAAAAATTAGTTGGGCATGG
 TGGCACATGCCTGTAGTCCAGCTACTCCAGAGGCTGAGATGGATCATCT
 GAGCCTCAGGAGGTTGAGGCTGCAGTGAAGCTGTGACTGCGCCACTGCACT
 CCAGTCTGGGACAACAGAGCAAGACCCGTCTAAAAAAAAGAAAAAA
 AAAATTCTAAGAAGCTGTCTACAAAGTTGAGCTTGTAGTT
 TTCATGTGTAATATATTATAAATTATCTTTGGATATAATAATGCTT
 TCATATACCTGCA

FIG. 1L

6065914_eIF2kinase_man	-----
14790	MAGGRGAPGRGRDEPPESYPQRQDH
6066585_eIF2kinase_mouse	MAGGRGASGRGRAEPQESYSQRQDH
6065914_eIF2kinase_man	-----
14790	ELQALEAIYGADFQDLRPDACPV
6066585_eIF2kinase_mouse	ELQALEAIYGSDFQDLRPDARGRVR
6065914_eIF2kinase_man	-----
14790	EPPEINLVLYPQGLTGEVYVKVDL
6066585_eIF2kinase_mouse	EPPEINLVLYPQGLAGEEVYVQVEL

FIG. 2A



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6065914_eIF2kinase_man	-----
14790	RVKCPPTYPDVVPEIELKNAKGLSN
6066585_eIF2kinase_mouse	QVKCPPTYPDVVPEIELKNAKGLSN
6065914_eIF2kinase_man	-----
14790	ESVNLLKSRLEELAKKHCGEVMIFE
6066585_eIF2kinase_mouse	ESVNLLKSHLEELAKKQCGEVMIFE
6065914_eIF2kinase_man	-----
14790	LAYHVQSFLEHNKPPPFSFHEEML
6066585_eIF2kinase_mouse	LAHHVQSFLEHNKPPPFSFHEEML
6065914_eIF2kinase_man	-----
14790	ERRAQEEQQRLLEAKRKEEQQEQRREI
6066585_eIF2kinase_mouse	ERQAQEKKQQLLEARRKEEQQEQRREI
6065914_eIF2kinase_man	-----
14790	LHEIQRRKEEIKEKKRKEAKQER
6066585_eIF2kinase_mouse	LHEIQRRKEEIKEKKRKEAKQER
6065914_eIF2kinase_man	-----
14790	LEIASLSNQDHTSKDPPGHRTAAI
6066585_eIF2kinase_mouse	LEITSLTNQDYASKRDPAGHRAAAI
6065914_eIF2kinase_man	-----
14790	LHGGSPDFVGNGKHRANSSGRSRRE
6066585_eIF2kinase_mouse	LHGGSPDFVGNGKARTYSSGRSRRE
6065914_eIF2kinase_man	-----
14790	RQYSVCNSEDSPGSCEILYFNMGSP
6066585_eIF2kinase_mouse	RQYSVCSGEPSGSCDILHFSVGSP
6065914_eIF2kinase_man	-----
14790	DQLMVHKGKCIGSDEQLGKLVYNAL
6066585_eIF2kinase_mouse	DQLMVHKGRCVGSDEQLGVVYNAL
6065914_eIF2kinase_man	-----
14790	ETATGGFVLLYEWVLQWQKKMGPFL
6066585_eIF2kinase_mouse	ETATGSFVLLHEWVLQWQK-MGPCL

FIG. 2B



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6065914_eIF2kinase_man	-----
14790	TSQEKEKIDKCKKQIQGTETEFNSL
6066585_eIF2kinase_mouse	TSQEKEKIDKCKRQIQGAETEFSSL
6065914_eIF2kinase_man	-----
14790	VKLSHPNVVRYLAMNLKEQDDSVV
6066585_eIF2kinase_mouse	VKLSHPNIVRYFAMNSREEEDSIVI
6065914_eIF2kinase_man	-----
14790	DILVEHISGVSLAAHLSHSGPIPVAH
6066585_eIF2kinase_mouse	DILAEHVSGISLATHLSHSGPVPAH
6065914_eIF2kinase_man	-----
14790	QLRRYTAQLLSGLDYLHSNSVVHKV
6066585_eIF2kinase_mouse	QLRKYTAQLLAGLDYLHSNSVVHKV
6065914_eIF2kinase_man	-----
14790	LSASNVLVDAEGTVKITDYSISKRL
6066585_eIF2kinase_mouse	LSASSVLVDAEGTVKITDYSISKRL
6065914_eIF2kinase_man	-----
14790	ADICKEDVFEQTRVRFSDNALPYKT
6066585_eIF2kinase_mouse	ADICKEDVFEQARVRFSDSALPYKT
6065914_eIF2kinase_man	-----
14790	GKKGDVWRLGLLLLSLSQGQECGEY
6066585_eIF2kinase_mouse	GKKGDVWRLGLLLLSLSQGQECGEY
6065914_eIF2kinase_man	-----
14790	PVTIPSDLPADFQDFLKKCVCLDDK
6066585_eIF2kinase_mouse	PVTIPSDLPADFQDFLKKCVCLDDK
6065914_eIF2kinase_man	-----
14790	ERWSPQQLLKHSFINPQPKMPLVEQ
6066585_eIF2kinase_mouse	ERWSPQQLLKHSFINPQPKLPLVEQ
6065914_eIF2kinase_man	-----
14790	SPEDSGGQDYVETVIPSNRLPSAAF

FIG. 2C



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6066585_eIF2kinase_mouse SPEDSGGQDYIETVIPSNQLPSAAF

6065914_eIF2kinase_man -----

14790 FSETQRQFSRYFIEFEELQLLGKGA

6066585_eIF2kinase_mouse FSETQKQFSRYFIEFEELQLLGKGA

6065914_eIF2kinase_man -----

14790 FGAVIKVQNKLKGCCYAVKRIPINP

6066585_eIF2kinase_mouse FGAVIKVQNKLKGCCYAVKRIPINP

6065914_eIF2kinase_man -----

14790 ASRQFRRRIKGEVTLLSRLHHENIVR

6066585_eIF2kinase_mouse ASRHFRRIKGEVTLLSRLHHENIVR

6065914_eIF2kinase_man -----

14790 YYNAWIERHERPAGPGT PPPDSGPL

6066585_eIF2kinase_mouse YYNAWIERHERPAVPGT PPPDCTPQ

6065914_eIF2kinase_man -----

14790 AKDDRAARGQPASDTDGLDSVEAAA

6066585_eIF2kinase_mouse AQDSPATCGKTS GDTEELGSVEAAA

6065914_eIF2kinase_man -----

14790 PPPILSSSVEWSTSGERSASARFPA

6066585_eIF2kinase_mouse PPPILSSSVEWSTSAERSTSTRFPV

6065914_eIF2kinase_man -----

14790 TGPGSSDDEDDDEDEHGGVFSQSFL

6066585_eIF2kinase_mouse TGQDSSSDEED-EDERDGVFSQSFL

6065914_eIF2kinase_man -----

14790 PASDSESDIIIFDNE DENSKSQNQDE

6066585_eIF2kinase_mouse PASDSDSDIIIFDNE DENSKSQNQDE

6065914_eIF2kinase_man -----

14790 DCNEKNGCHESEPSVTTEAVHYLYI

FIG. 2D

O.G. FIG.	CLASS	SUBCLASS
APPROVED	BY	DRAFTSMAN



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6066585_eIF2kinase_mouse DCNQKDGSHEIEPSVTAEAVHYLYI

6065914_eIF2kinase_man -----

14790 QMEYCEKSTLRDTIDQGLYRDTVRL

6066585_eIF2kinase_mouse QMEYCEKSTLRDTIDQGLFRDTSRL

6065914_eIF2kinase_man -----

14790 WRLFREILDGLAYIHEKGMIHRDLK

6066585_eIF2kinase_mouse WRLFREILDGLAYIHEKGMIHRDLK

6065914_eIF2kinase_man -----

14790 PVNIFLDSDDHVKIGDFGLATDHLA

6066585_eIF2kinase_mouse PVNIFLDSDDHVKIGDFGLATDHLA

6065914_eIF2kinase_man -----

14790 FSADSKQDDQTGD-LIKSDPSGHLT

6066585_eIF2kinase_mouse FTAEGKQDDQAGDGVIKSDPSGHLT

6065914_eIF2kinase_man -----

14790 GMVGTALYVSPEVQGSTKSAYNQKV

6066585_eIF2kinase_mouse GMVGTALYVSPEVQGSTKSAYNQKV

6065914_eIF2kinase_man -----

14790 DLFSLGIIFFFEMSYHPMVTASERIF

6066585_eIF2kinase_mouse DLFSLGIIFFFEMSYHPMVTASERIF

6065914_eIF2kinase_man -----

14790 VLNQLRDPTSPKFPEDFDDGEHAKQ

6066585_eIF2kinase_mouse VLNQLRDPTSPKFPPDDFDDGEHTKQ

6065914_eIF2kinase_man -----

14790 KSVISWLLNHDPAKRPTATELLKSE

6066585_eIF2kinase_mouse KSVISWLLNHDPAKRPTAMELLKSE

FIG. 2E



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6065914_eIF2kinase_man	-----
14790	LLPPPQMEESELHEVLHHTLNVDG
6066585_eIF2kinase_mouse	LLPPPQMEESELHEVLHHTLANIDG
6065914_eIF2kinase_man	-----
14790	KAYRTMMAQIFSQRISPAIDTYDS
6066585_eIF2kinase_mouse	KAYRTMMSQIFCQHISPAIDTYDS
6065914_eIF2kinase_man	-----
14790	DILKGNFSIRTAKMQQHVCETIIRI
6066585_eIF2kinase_mouse	DILKGNFLIRTAKIQQQLVCETIVRV
6065914_eIF2kinase_man	-----
14790	FKRHGAVQLCTPLLLPRNRQIYEHN
6066585_eIF2kinase_mouse	FKRHGAVQLCTPLLLPRNRQIYEHN
6065914_eIF2kinase_man	--ALFMDHSGMLVMLPFDLRIPTFAR
14790	EAALFMDHSGMLVMLPFDLRIPTFAR
6066585_eIF2kinase_mouse	EAALFMDHSGMLVMLPFDLRVPFAR
*****:*****	
6065914_eIF2kinase_man	YVARNNILILKRYCIEERVFRPRKLD
14790	YVARNNILNLKRYCIEERVFRPRKLD
6066585_eIF2kinase_mouse	YVARNNILNLKRYCIEERVFRPRKLD

6065914_eIF2kinase_man	RFHPKELLECAFDIVTSTTNSFLPT
14790	RFHPKELLECAFDIVTSTTNSFLPT
6066585_eIF2kinase_mouse	RFHPKELLECAFDIVTSTTNSSLPT

6065914_eIF2kinase_man	AEIIYTIYEIIQEFPALQERNYSIY
14790	AEIIYTIYEIIQEFPALQERNYSIY
6066585_eIF2kinase_mouse	AETIYTIYEIIQEFPALQERNYSIY

FIG. 2F

APPROVED	C.G. FIG.
CLASS	SUBCLASS
BY DRAFTSMAN	



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6065914_eIF2kinase_man	LNHTMLLKAILLHCGIPEDKLSQVY
14790	LNHTMLLKAILLHCGIPEDKLSQVY
6066585_eIF2kinase_mouse	LNHTMLLKAILLHCGIPEDKLSQVY

6065914_eIF2kinase_man	IILYDAVTEKLTRREVEAKFCNLSL
14790	IILYDAVTEKLTRREVEAKFCNLSL
6066585_eIF2kinase_mouse	VILYDAVTEKLTRREVEAKFCNLSL

6065914_eIF2kinase_man	SSNSLCRLYKFIEQKGDLQDLMP
14790	SSNSLCRLYKFIEQKGDLQDLMP
6066585_eIF2kinase_mouse	SSNSLCRLYKFIEQKGDLQDLPT

6065914_eIF2kinase_man	NSLIKQKTGIAQLVKYGLKDLEEV
14790	NSLIKQKTGIAQLVKYGLKDLEEV
6066585_eIF2kinase_mouse	NSLIKQKTGVAQLVKYSLKDLEDV
	*****:*****.*****:***
6065914_eIF2kinase_man	GLLKKLGIKLQVLINLGLVYKVQQH
14790	GLLKKLGIKLQVLINLGLVYKVQQH
6066585_eIF2kinase_mouse	GLLKKLGVKLQVSINLGLVYKVQQH
	*****:*****:*****:***
6065914_eIF2kinase_man	NGIIFQFVAFIKRRQRAVPEILAAG
14790	NGIIFQFVAFIKRRQRAVPEILAAG
6066585_eIF2kinase_mouse	TGIIIFQFLAFSKRRQRVVPEILAAG
	*****:**.*****:*****
6065914_eIF2kinase_man	GRYDLLIPQFRGPQALGPVPTAIGV
14790	GRYDLLIPQFRGPQALGPVPTAIGV
6066585_eIF2kinase_mouse	GRYDLLIPKFRGPQTVGPVPTAVGV
	*****:*****:*****:***
6065914_eIF2kinase_man	SIAIDKISAAVLNMEESVTISSCDL
14790	SIAIDKISAAVLNMEESVTISSCDL
6066585_eIF2kinase_mouse	SIAIDKIFAVVLNMEEPVTVSSCDL
	***** * .*****.**:*****

FIG. 2G



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6065914_eIF2kinase_man LVVSVGQMSMSRAINLTQKLWTAGI
 14790 LVVSVGQMSMSRAINLTQKLWTAGI
 6066585_eIF2kinase_mouse LVVSVGQMSMSRAINLTQKLWTAGI

6065914_eIF2kinase_man TAEIMYDWSQSQEELQEYCRHHEIT
 14790 TAEIMYDWSQSQEELQEYCRHHEIT
 6066585_eIF2kinase_mouse TAEIMYDWSQSQEELQEYCRHHEIT

6065914_eIF2kinase_man YVALVSDKEGSHVKVKSFEKERQTE
 14790 YVALVSDKEGSHVKVKSFEKERQTE
 6066585_eIF2kinase_mouse YVALVSDKEGSHVKVKSFEKERQTE

6065914_eIF2kinase_man KRVLETELVDHVLQKLRTKVTDERN
 14790 KRVLETELVDHVLQKLRTKVTDERN
 6066585_eIF2kinase_mouse KRVLESDLVDHVMQKLRTKVGDERN
 *****:*****:*****:*****

6065914_eIF2kinase_man GREASDNLAVQNLKGFSNASGLFE
 14790 GREASDNLAVQNLKGFSNASGLFE
 6066585_eIF2kinase_mouse FRDASDNLAVQTLKGFSNASGLFE
 *:*****.*****

6065914_eIF2kinase_man IHGATVVPIVSVLAPEKLSASTRRR
 14790 IHGATVVPIVSVLAPEKLSASTRRR
 6066585_eIF2kinase_mouse IHGTTVVPNVIVLAPEKLSASTRRR
 :* * *****

6065914_eIF2kinase_man YETQVQTRLQTSLANLHQKSSEIEI
 14790 YETQVQTRLQTSLANLHQKSSEIEI
 6066585_eIF2kinase_mouse HEIQVQTRLQTTLANLHQKSSEIEI
 :* *****:*****

FIG. 2H

APPROVED	O.G. FIG.
BY	CLASS
	SUBCLASS
	DRAFTSMAN:



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6065914_eIF2kinase_man LAVDLPKETILQFLSLEWDADEQAF
14790 LAVDLPKETILQFLSLEWDADEQAF
6066585_eIF2kinase_mouse LAVDLPKETILQFLSLEWDADEQAF
 :** * *****

6065914_eIF2kinase_man NTTVKQLLSRLPKQRYLKLVCDEIY
14790 NTTVKQLLSRLPKQRYLKLVCDEIY
6066585_eIF2kinase_mouse NTTVKQLLSRLPKQRYLKLVCDEIY
 :**

6065914_eIF2kinase_man NIKVEKKVSVLFLYSYRDDYYRILE
14790 NIKVEKKVSVLFLYSYRDDYYRILE
6066585_eIF2kinase_mouse NIKVEKKVSVLFLYSYRDDYYRILE
 ↑SEQ. ID NO: 4
 ↑SEQ. ID NO: 5
 :**

FIG. 2I

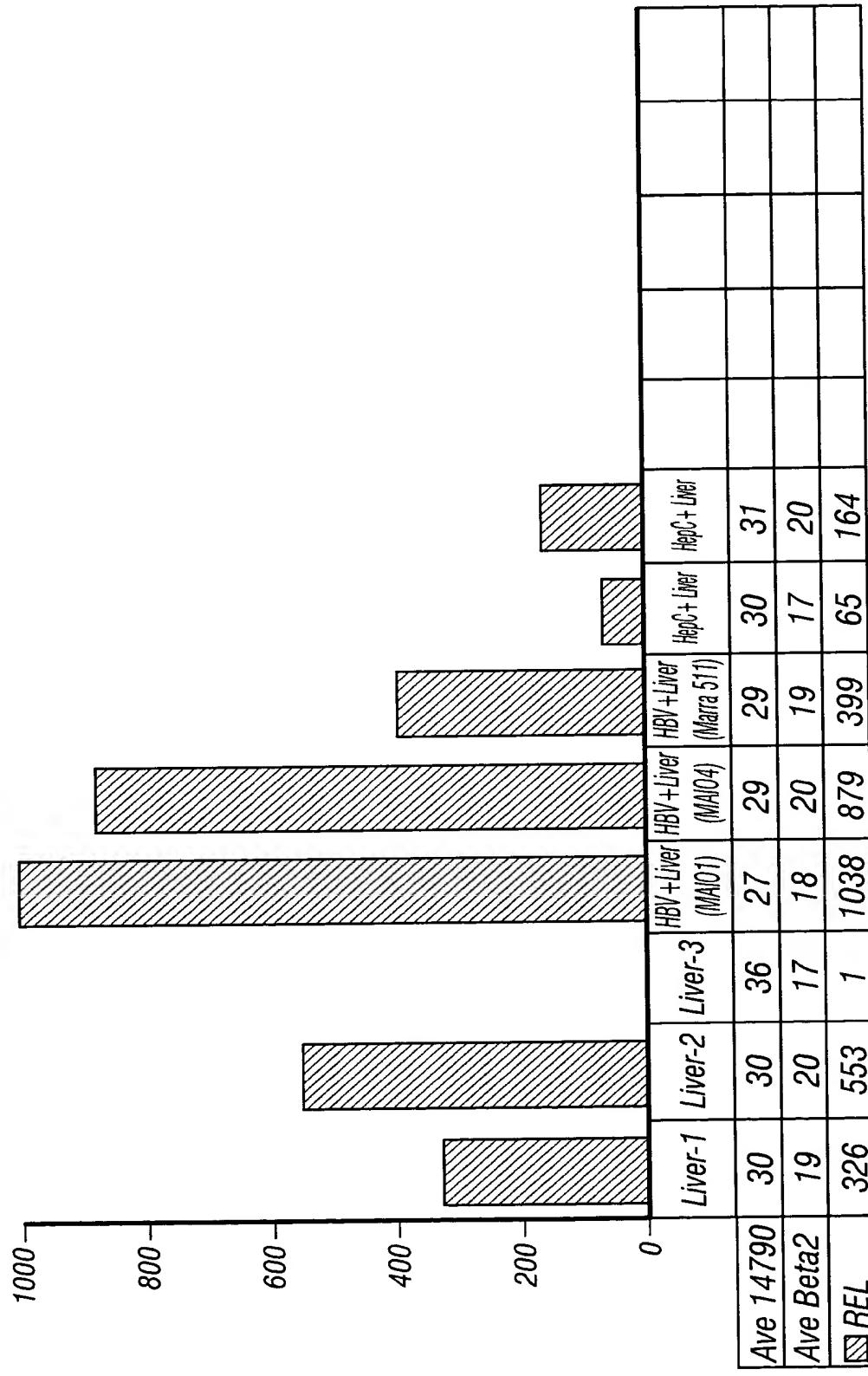
APPROVED	C.G. FIG.
CLASS	SUBCLASS
BY	
DRAFTSMAN	



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APPROVED	O.G. FIG.
BY	CLASS
	SUBCLASS
	CRAFTSMAN

Ser/Thr Kinase 14790 Expression on HBV + Liver



Relative Expression (Liver PIt 260 used as reference sample)

FIG. 3



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14790 Expression on HepG2.15 (HBV-expressing cell line)

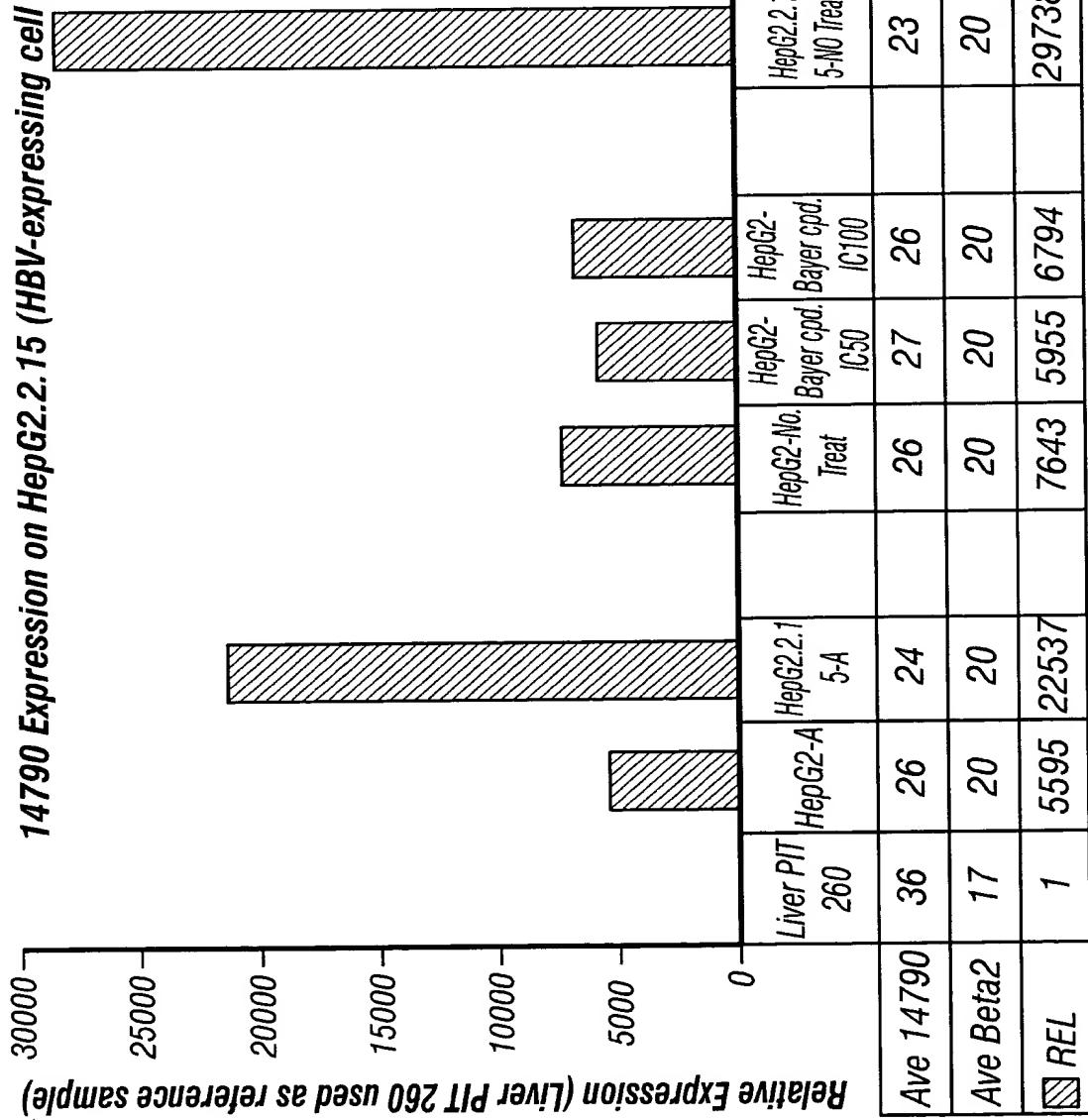


FIG. 4



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Gene 14790 Expression in Normal Human Tissue
Relative Expression (Thyroid as Reference)

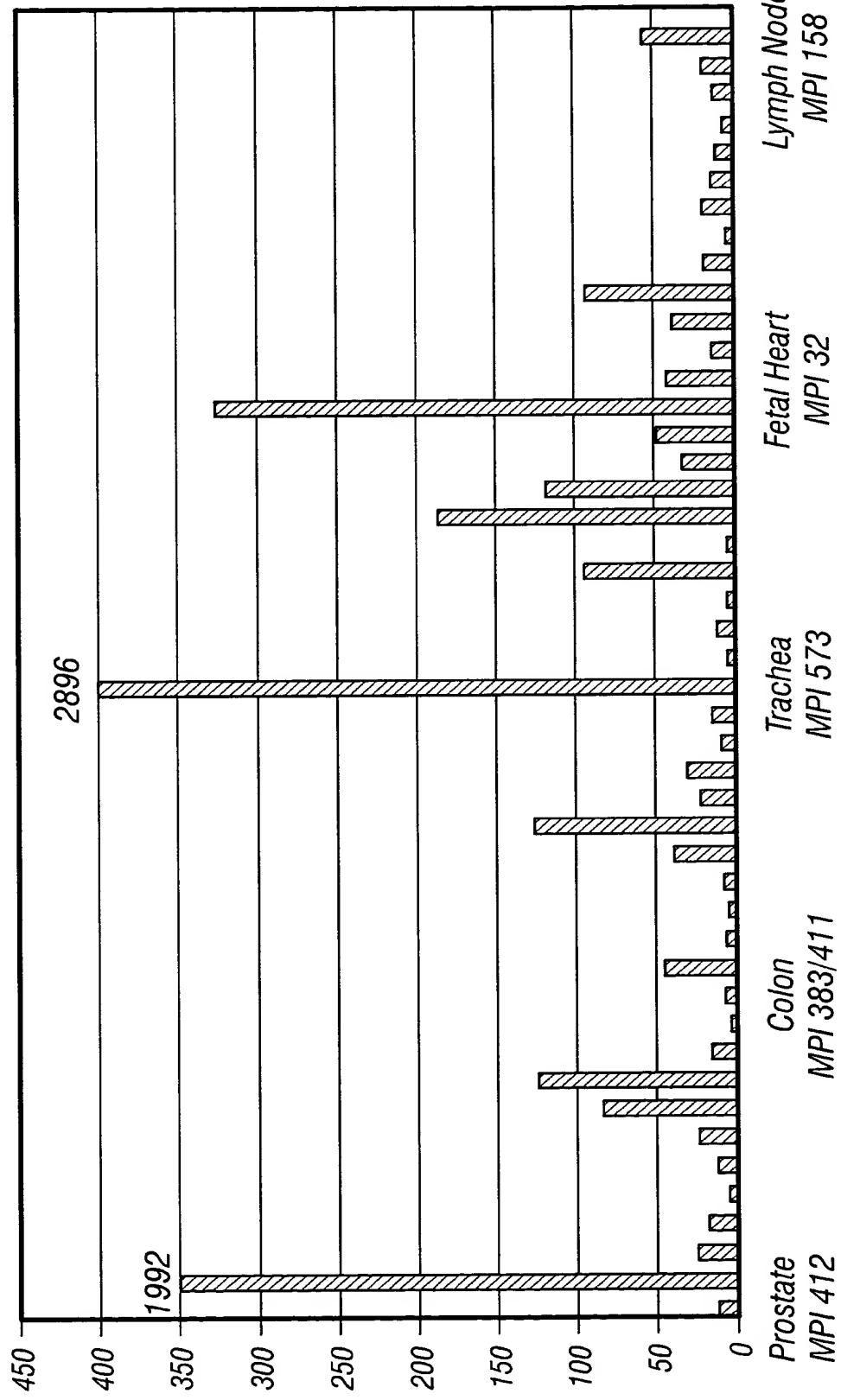


FIG. 5



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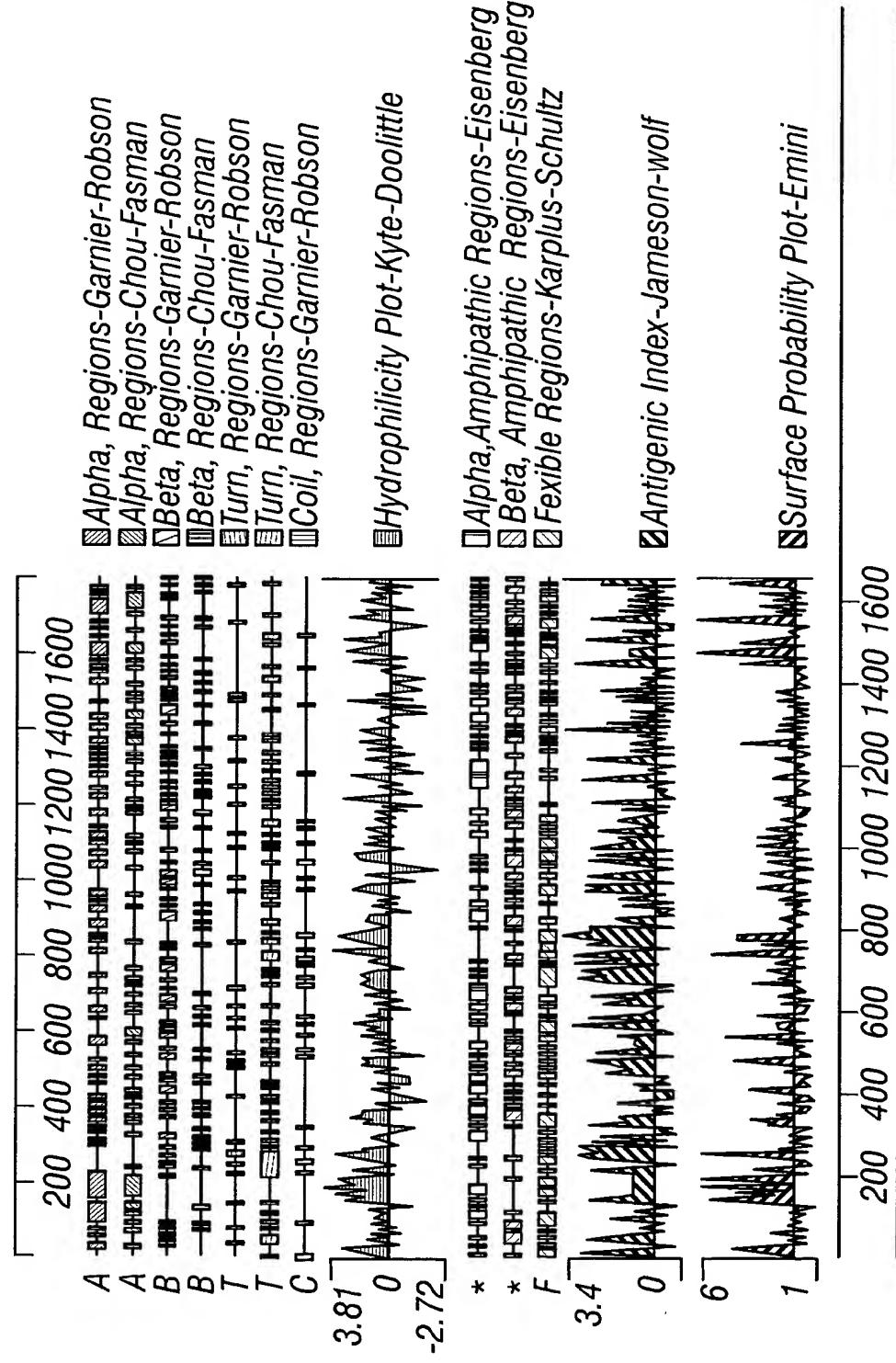


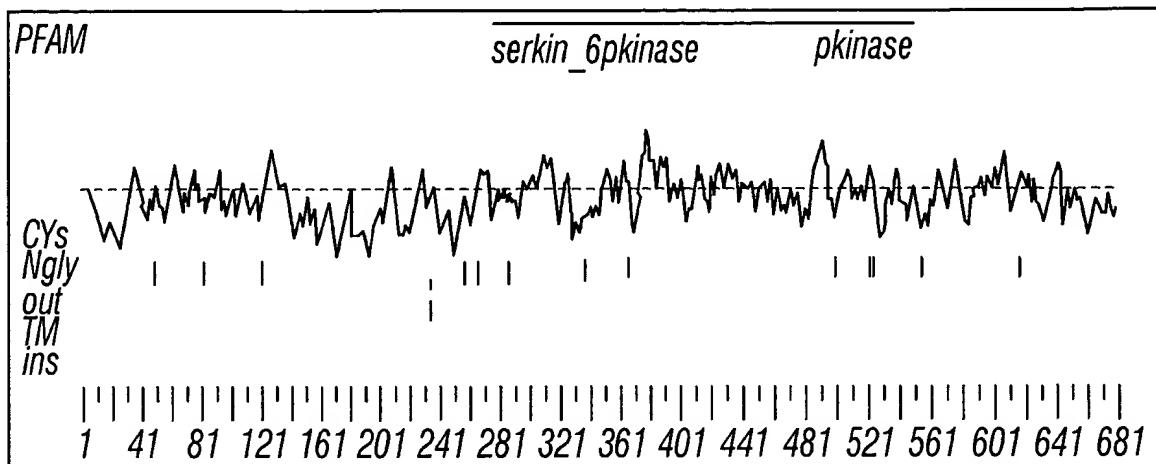
FIG. 6



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Analysis of 14790 (1649 aa)



>14790

MAGGRGAPGRGRDEPPESYPQRQDHELQALEAIYGADFQDLRPDACPVL
KEPPEINLVLYPQGLTGEEVYVKVDLRVKCPPTYPDVVPEIELKNAKGL
SNESVNLLKSRLEELAKKHCGEVMI FELAYHVQSF LSEHNKPPPFSFHE
EMLERRAQEEQQRLLEAKRKEEQQREI LHEI QRRKEEIKEEKKRKEMA
KQERLEIASLSNQDHTSKKDPGGHRTAA I LHGGSPDFVGNGKHRANSSG
RSRRERQYSVCNSEDSPGSC EILYFNMGSPDQLMVHKGKCIGSDEQLGK
LVYNALETATGGFVLLYEWVLQWQKKMGPFLTSQEKEKIDKCKKQIQGT
ETEFNSLVKLSHPNVVRYLAMNLKEQDDSI VVDILVEHISGVSLAAHLS
HSGPIPVHQLRRYTAQLLSGLDYLHSNSVVHKVLSASNVLVDAEGTVKI
TDYSISKRLADICKEDVFEQTRVRFSDNALPYKTGKKGDVWRLGLLL
LSQGQECGEY

FIG. 7A



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SPEDSGGQDYVETVIPSNRPLPSAAFFSETQRQFSRYFIEFEELQLLGKA
FGAVIKVQNKLDGCCYAVKRIPINPASRQFRRIKGEVTLLSLHHENIVR
YYNAWIERHERPAGPGTPPPDGPLAKDDRAARGQPASDTDGLDSVEAAA
PPPILSSSVEWSTSGERSASARFPATGPGSSDDEDDDEDEHGGVFSQSFL
PASDSESDIIIFDNEDENSKSQNQDEDCEKNGCHESEPSVTTEAVHYLYI
QMEYCEKSTLRDTIDQGLYRDTVRLWRLFREILDGLAYIHEKGMIHRDLK
PVNIFLDSDDHVKIGDFGLATDHLAFSADSKQDDQTGDLIKSDPSGHLTG
MVGTLALYVSPEVQGSTKSAYNQKVDLFSLGIIFFEMSYHPMVTASERIFV
LNQLRDPTSPKFPEFDDEGEHAKQKSVISWLLNHDPAKRPTATELLKSEL
LPPPQMEESELHEVLHHTLTNVDGKAYRTMMAQIFSQRISPAIDYTYDSD
ILKGNFSIRTAKMQQHVCETIIRIFKRHGAQLCTPLLPNRQIYEHNE
AALFMDHSGMLVMLPFDLRIPFARYVARNNILNLKRYCIEVFRPRKLD
FHPKELLECAFDIVTSTTNSFLPTAEIIYTIYEIIQEFPALQERNYSIYL
NHTMLLKAILLHCGIPEDKLSQVYIILYDAVTEKLTRREVEAKFCNLSLS
SNSLCRLYKFIEQKGDLQDLMPTINSLIKQKTGIAQLVKYGLKDLEEVVG
LLKKLGKIKLQVLINLGLVYKVQHNGIIFQFVAFIKRRQRAVPEILAAGG
RYDLLIPQFRGPQALGPVPTAIGVSIAIDKISAAVLNMEESVTIISCDLL
VVSVGQMSMSRAINLTQKLWTAGITAEIMYDWSQSQEELQEYCRHHEITY
VALVSDKEGSHVKVKSFEKERQTEKRVLETELVDHVLQKLRTKVTDERNG
REASDNLAVQNLKGSFSNASGLFEIHGATVVPIVSVAPEKLSASTRRRY
ETQVQTRLQTSLANLHQKSSEIEILAVDLPKETILQFLSLEWDAEQAFN
TTVKQLLSRLPKQRYLKLVCDIYNIKVEKKVSVLFLYSYRDDYYRILF

PSORT Prediction of Protein Localization

MITDISC: discrimination of mitochondrial targeting seq

R content:	3	Hyd Moment (75):	7.37
Hyd Moment (95):	6.02	G content:	5
D/E content:	2	S/7 content:	0

Gavel: prediction of cleavage sites for mitochondrial preseq

R-2 motif at 20 GRG:RD

MUCDISC: discrimination of nuclear localization signals

pat4: KKRK (5) at 190

FIG. 7B

APPROVED	O.G. FIG.
CLASS	SUBCLASS
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DRAFTSMAN	



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pat4: RPRK (4) at 1144
pat7: none
bipartite: RRAQEEQQRLLEAKRKE at 152
bipartite: KRIPINPASRQFRRRIKG at 619
content of basic residues: 12:11
NLS Score: 1.08

ER Membrane Retention Signals:

XXRR-like motif in the N-terminus: AGGR

None

Final Results (k = 9/23):

56.5 %: nuclear
30.4 %: cytoplasmic
4.3 %: vacuolar
4.3 %: mitochondrial
4.3 %: vesicles of secretory system

prediction for 14790 is nuc (k=23)

Start	End	Feature	Seq
144	204	coiled coil	FHEEMLERRA...AKQERLEIAS

Signal Peptide Predictions for 14790

Method	Predict	Score	Mat@
SignalP (eukaryote)	NO		

Note: amino-terminal 70aa used for signal peptide prediction

Transmembrane Segments Predicted by MEMSAT

Start	End	Orient	Score
1522	1538	ins-->out	0.8

FIG. 7C



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>14790

MAGGRGAPGRGRDEPPESYPQRQDHELQALEAIYGADFDQLRPDACPVKE
EPPEINLVLYPQGLTGEDEVYVKVDLRVCPPTYPDVVPEIELKNAKGLSN
ESVNLLKSRLEELAKKHCGEVMIFELAYHVQSFLEHNKPPPFSHEEML
ERRAQEEQQLLEAKRKEEQQEQRREILHEIQRRKEEIKEKKRKEMAKQER
LEIASLSNQDHTSKDPGGHRTAAILHGGSPDFVGNKGHRANSSGRSRRE
RQYSVCNSEDSPGSCEILYFNMGSPDQLMVHKGKCIGSDEQLGKLVYNAL
ETATGGFVLLYEWVLQWQKKMGPFLTSQEKEKIDKCKQIQGTETEFNSL
VKLSHPNVVRYLAMNLKEQDDSIVVVDILVEHISGVSLAAHLSHSGPIPVH
QLRRTAQLLSGLDYLHSNSVVKVLSASNVLVDAEGTVKITDYSISKRL
ADICKEDVFEQTRVRFSDNALPYKTGKGDVWRLGLLLLSLSQGQECGEY
PVTIPSDLPPADFQDFLKCVCLDDKERWSPQQLLKHSFINPQPKMPLVEQ
SPEDSGGQDYVETVIPSNRPLPSAFFSETQRQFSRYFIEFEELQLLGKA
FGAVIKVQNKLDGCCYAVKRIPINPASRQFRRIKGEVTLLSRLHHENIVR
YYNAWIERHERPAGPGTPPPDGPLAKDDRAARGQPASDTDGLDSVEAAA
PPPILSSSVEWSTSGERSASARFPATGPGSSDDEDDDEDEHGGVFSQSFL
PASDSESDIIFDNEDENSKSQNQDEDCCNEKNGCHESEPSVTTEAVHYLYI
QMEYCEKSTLRDTIDQGLYRDTVRLWRLFREILDGLAYIHEKGMIHRDLK
PVNIFLDSDDHVKIGDFGLATDHLAFSADSKQDDQTGDLIKSDPSGHLTG
MVGTALEYVSPEVQGSTKSAYNQKVDLFSLGIIFFEMSYHPMVTASERIFV
LNQLRDPTSPKFEDFDDGEHAKQKSVISWLLNHDPAKRPTATELLKSEL
LPPPQMEESELHEVLHHTLTNVDGKAYRTMMAQIFSQRISPAIDYTYDSD
ILKG NFSIRTAKMQQHVCETIIRIFKRHGAVQLCTPLLLPRNRQIYEHNE
AALFMDHSGMLVMLPFDLRIPTFARYVARNNILNLKRYCIEVFRPRKLD
FHPKELLECAFDIVTSTNSFLPTAEIIYTIYEIIQEFPALQERNYSIYL
NHTMLLKAILLHCGIPEDKLSQVYIILYDAVTEKLTRREVEAKFCNLSLS
SNSLCRLYKIEQKGLQDLMPTINSLIKQKTGIAQLVKYGLKDLEEVVG
LLKKLGKIKLQVLINLGLVYKVQQHNGIIFQFVAFIKRRQRAVPEILAAGG
RYDLLIPQFRGPQALGPVPTAIGVSIADKISAVALNMEESVTISSCDLL
VVSVGQMSMSRAINLTQKLWTAGITAEIMYDWSQSQEELQEYCRHHEITY
VALVSDKEGSHVKVKSFEKERQTEKRVLETELVDHVLQKLRTKVTDERNG
REASDNLAVQNLKGSFSNASGLFEIHGATVVPIVSVLAPEKLSASTRRRY
ETQVQTRLQTSANLHQKSSEIEILAVDLPKETILQFLSLEWDAEQAFN
TTVKQLLSRLPKQRYLKLCDEIYNIKVEKKVSVLFLYSYRDDYYRILF

FIG. 7D



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Prosite Pattern Matches for 14790

Prosite version: Release 12.2 of February 1995

APPROVED	O.G. FIG.	CLASS	SUBCLASS
BY			
DRAFTSMAN			

>PS00021|PDOC00001|ASN_GLYCOSYLATION N-glycosylation site.

Query: 100 NESV 103
Query: 242 NSSG 245

Query:	1055	NFSI	1058
Query:	1195	NYSI	1198
Query:	1201	NHTM	1204
Query:	1246	NLSL	1249
Query:	1414	NLTQ	1417
Query:	1518	NASG	1521
Query:	1600	NTTV	1603

>PS00004|PDOC0004|CAMP_PHOSPHO_SITE cAMP- and cGMP-dependent protein kinase phosphorylation site.

Query: 403 RRYT 406
Query: 988 KRPT 991
Query: 1630 KKVS 1633

>PS00005|PDOC00005|PKC_PHOSPHO_SITE protein kinase C phosphorylation site.

Query:	212	TSK	214
Query:	244	SGR	246
Query:	247	SRR	249
Query:	438	TVK	440
Query:	447	SKR	449
Query:	475	TGK	477
Query:	567	SNR	569
Query:	579	TQR	581
Query:	720	SAR	722
Query:	809	TLR	811
Query:	822	TVR	824
Query:	915	STK	917
Query:	945	SER	947
Query:	959	SPK	961

FIG. 7E



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Query:	1036	SQR	1038
Query:	1057	SIR	1059
Query:	1060	TAK	1062
Query:	1232	TEK	1234
Query:	1236	TRR	1238
Query:	1416	TQK	1418
Query:	1455	SDK	1457
Query:	1473	TEK	1475
Query:	1545	STR	1547
Query:	1602	TVK	1604
Query:	1639	SYR	1641

APPROVED	O.G. FIG.
	SUBCLASS
BY	CLASS
DRAFTSMAN	

>PS00006|PDOC00006|CK2_PHOSPHO_SITE Casein kinase II phosphorylation site.

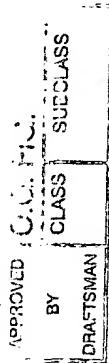
Query:	65	TGEE	68
Query:	82	TYPD	85
Query:	108	SRLE	111
Query:	144	SFHE	147
Query:	207	SNQD	210
Query:	213	SKKD	216
Query:	247	SRRE	250
Query:	326	TSQE	329
Query:	343	TETE	346
Query:	411	SGLD	414
Query:	551	SPED	554
Query:	688	SDTD	691
Query:	707	SSVE	710
Query:	713	TSGE	716
Query:	730	SSDD	733
Query:	753	SDSE	756
Query:	809	TLRD	812
Query:	880	SKQD	883
Query:	943	TASE	946
Query:	991	TATE	994
Query:	1020	TNVD	1023
Query:	1180	TIYE	1183
Query:	1236	TRRE	1239

FIG. 7F



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Query: 1395 SSCD 1398
Query: 1435 SQEE 1438
Query: 1455 SDKE 1458
Query: 1570 SEIE 1573
Query: 1639 SYRD 1642



>PS00007 | PDO00007 | TYR_PHOSPHO_SITE Tyrosine kinase phosphorylation site.

Query: 246 RSRRERQY 253
Query: 811 RDTIDQGLY 819
Query: 830 REILDGLAY 838
Query: 1444 RHHEITY 1450
Query: 1617 KLVCDEIY 1624

>PS00008 | PDO00008 | MYRISTYL N-myristoylation site.

Query: 218 GGHRTA 223
Query: 384 GVSLAA 389
Query: 494 CQECGE 499
Query: 599 GAFGAV 604
Query: 613 GCCYAV 618
Query: 684 GQPASD 689

Query: 742 GGVFSQ 747
Query: 782 GCHESE 787
Query: 900 GMVGTAA 905
Query: 914 GSTKSA 919
Query: 1373 GVSIAI 1378
Query: 1514 GSFSNA 1519

>PS00009 | PDO00009 | AMIDATION Amidation site.

Query: 475 TGKK 478

>PS00107 | PDO00100 | PROTEIN_KINASE_ATP Protein kinases ATP-binding region signature.

FIG. 7G



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Query: 596 LGKGAFGAV 604

>PS00108 | PDOC00100 | PROTEIN_KINASE_ST
Serine/Threonine protein kinases active-site
signature.

Query: 844 MIHRDLKPVNIFL 856

>PS00116 | PDOC00107 | DNA_POLYMERASE_B DNA polymerase
family B signature.

Query: 687 ASDTDGLDS 695

Protein Family / Domain Matches, HMMer version 2

Searching for complete domains in PFAM
Hmmpfam search a single seq against HMM database
HMMER: 2.1.1 (Dec 1998)
Copyright (C) 1992-1998 Washington University
School of Medicine
HMMER is freely distributed under the GNU General
Public License (GPL).

HMM file: /prod/ddm/seqanal/PFAM/pfam4.4/Pfam
Sequence file: /prod/ddm/wspace/orfanal/oa-
script.16895.seq

Query: 14790

Scores for sequence family classification (score
includes all domains):

Model	Description
-----	-----
<u>pkinase</u>	Eukaryotic protein kinase domain
<u>Ribosomal L23</u>	Ribosomal protein L23
<u>mRNA_cap_enzyme</u>	mRNA capping enzyme

FIG. 7H



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	Score	E-value	N
<u>pkinase</u>	282.0	7.8e-81	4
Ribosomal_L23	5.0	3.9	1
<u>mRNA_cap_enzyme</u>	-181.3	9.6	1

Parsed for domains:

Model	Domain	seq-f	seq-t	hmm-f	hmm-t
pkinase	1/4	332	443	.. 30	134..
pkinase	2/4	501	539	.. 237	278.]
pkinase	3/4	590	662	.. 1	66 [.
pkinase	4/4	797	1001	.. 65	278.]
Ribosomal_L23	1/1	1223	1244	.. 1	23 [.
<u>mRNA_cap_enzyme</u>	1/1	1004	1309	.. 1	504 []

	Score	E-value
pkinase	69.4	3.7e-18
pkinase	22.8	3.2e-05
pkinase	51.2	4.2e-13
pkinase	138.7	1.1e-37
Ribosomal_L23	5.0	3.9
<u>mRNA_cap_enzyme</u>	-181.3	9.6

Alignments of top-scoring domains:

Pkinase: domain 1 of 4, from 332 to 443: score 69.4, E = 3.7e-18

*->ilk..kesls..lrEiqilkrlsHpNIvrllg
 +++++ k++++++ +E l +lsHpN+vr+l
 14790 332 KIDkcKKQIQgtETEFNSLVKLSHPNVVRYLA 363

vfed...tddhlylvmEymegGdLfdyrrngpls
 + +++++ + + E+ g +L+ +l+ gp++
 14790 364 MNLKeqddDISVVDILVEHISGVSLAAHLSHSGPIP 398

ekeakkialQilrGleYLHsngivHRDLKpeNILL
 +++++++ Q+l+G1+YLHsn++vH L ++N+L+

FIG. 7I



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14790 399 VHQLRRYTAQLLGLDYLHSNSVVKVLSASNVLV 433

dengtvKiaD<-* SEQ. ID NO: 8
d +gtvKi+D

14790 434 DAEGTVKITD 443

pkinase: domain 2 of 4, from 501 to 539: score
22.8, E = 3.2e-5

*->rlplpsncSeelkdLlkkcLnkDPskRpGsat
+ +ps ++ +++d+lkkc ++D ++R+ +

14790 501 PVTIPSDLPADFQDFLKKCVCLDDKERW---S 529

akeilnhpwf<-* SEQ. ID NO: 9
+++l+h ++

14790 530 PQQLLKHSFI 539

pkinase: domain 3 of 4, from 590 to 662: score
51.2, E = 4.2e-13

*->yelleklGeGsfGkVykakhk.tgkivAvKil
+e l+ 1G+G+fG V k+++k +g+ +AvK +

14790 590 FEELQLLGKGAFGAVIKVQNK1DGCCYAVKRI 621

kkesls.....lrEiqilkrlsHpNIvrllgvfe
+ s++ ++ E+ +l rl+H+NIvr++ ++

14790 622 PINPASrqfrrriKGEVTLLSRLHHENIVRYYNAWI 656

FIG. 7J



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dtddhl<-* SEQ. ID NO: 10
+++++

14790 657 ERHERP 662

pkinase: domain 4 of 4, from 797 to 1001: score
138.7, E = 1.1e=37

*<-hlylvmEymegGdLfdy1rrngplsekeakki
+ly+ mEy+e+ L+d + + + + + ++
14790 797 YLYIQMEYCEKSTLRDTIDQGLYRDTVRLWRL 828

a1QilrGleYLHsngivHRDLKpeN1LldengtvK
++il G1+Y+H++g +HRDLKp NI+ld++ +vK
14790 829 FREILDGLAYIHEKGMIHRDLKPVNIFLDSDDHVK 863

iaDFGLArll.....ekl
i+DFGLA++ +++++++ +++++++
14790 864 IGDGLATDHlafsadskqddqtdliksdpsGHL 898

ttfvGTpwYmmAPEvileg...rgysskvDvWS1G
t+ vGT Y+ +PEv +g+++ Y kvD S1G
14790 899 TGMVGTALYV-SPEV--QGstksAYNQKVDFSLG 930

viLyElltggplfpgadlpaftggdevdqliifvl
+i++E+
14790 931 IIFFEMS----- 937

klPfsdelpktridpleelfrikkr....rlplps
P e++f +++ ++++ +++p+

FIG. 7K



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14790 938 YHPMV-----TASERIFVLNQLrdptSPKFPE 964

ncSee....1kdLlkkcLnkDPskRpGsatakeil
+ + ++ + k+++++Ln DP+kRp ta+e+l

14790 965 DFDDGehakQKSVISWLLNHDPAKRP---TATELL 996

nhpwf<-* SEQ. ID NO: 11
++ +

14790 997 KSELL 1001

Ribosomal_L23: domain 1 of 1, from 1223 to 1244:
score 5.0, E = 3.9

->tdiikyPviTeKlamnlleepNk<-
†SEQ. ID NO: 12

++ii y +TeKl+++++e ++

14790 1223 VYIILYDAVTEKLTRREVEA-KF 1244

RNA_cap_enzyme: domain 1 of 1, from 1004 to 1309:
score -181.3, E = 9.6

*->nqtteRvyelhkiElfsvpelnGKKiglgi
q++e + e+ l

14790 1004 PQMEES-----ELHEV-----LHH 1017

kLpktdteslrtmVakllglamktktfPddeGs
L+++d++ rtm a+ + P +

14790 1018 TLTNVDGKAYRTMMAQIFS---QRISPAIDYT 1046

qPVsferkdleesLkekdyfvceKTDGircshg
+ + + ++ vce ir+

14790 1047 YDSDILKGNFSIRTAKMQQHVCETI--IRI--- 1074

FNRTGFLIAaLLFlvehpgleeaishiLsgef.
+ +h + +++

14790 1075 -----FKRHGAVQL-----CTp 1086

.lidReknyYKQDYIDllpkrlfPrekdktkak
l+ R +Y ++ ++ lf

14790 1087 LLLPRNRQIY-----EHNEAALFMD----- 1106

FIG. 7L

APPROVED	O.G. FIG.
BY	CLASS
DRAFTSMAN	SUBCLASS



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APPROVED	O.G. FIG.
BY	CLASS
DRAFTSMAN	SUBCLASS

elptyhrgtllDGEavidinriaveqkTlrYvv
+ + l++ l d ++ rYv
14790 1107 -----HSGMLVM-LPFD----LRIPF-ARYVA 1127

FDalaisGqtviqrd.lskrLgdefikavkKpf
++ ++ + i+r + L+ f
14790 1128 RNNILNLKRYCIEFPRKLDL-F----HP 1153

defkkvmpdakilnqqkYNFpfkiglkhmslsy
+e+ d++++ f++ + ++y
14790 1154 KELLECAFDIVTSTT----NSFLPTAEIIYTIY 1182

gqlkllkaeskmviskadampkllHinDG1Ift
++ + a +
14790 1183 EIIQEFP-----L----- 1191

cvrdtpyieGeilVEPGNSY1DfnLlkWKPkee
++++i+ + Llk
14790 1192 QE-RNYSIYL-----NHTMLLKA---- 1208

nTvfelilefeevndPeldekdgfslyLdYda
+1 + +e++
14790 1209 -----ILLHCG-----IPEDK----- 1219

mpGELfkfslgVWqgGfnkrFevihtdqiffrv
+ ++++ + ++++++ v
14790 1220 -----LSQVYIILY-DAVTEKLTRRE----V 1240

afqklgRlkhefaelsVsdkdwylkaleqpld
++ f +ls+s +1
14790 1241 EAK-----FCNLSLSSNSLCRLY----- 1258

GrIVEcrladieiliFQegrWeylrfRdDKqqa
+++E ++ + + ++ + q+
14790 1259 -KFIEQKGDLQD-----LMPTINSLIKQK 1281

1KtgGYsgNhstvekvllsikDgvsieEeLlkl
tg +++v kD +Ee+ l
14790 1282 --TG-----IAQLVKYGLKD---LEEVVGL 1301

FIG. 7M



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fpGmyFAGAktlikr<-* SEQ. ID NO: 13
k +ik
14790 1302 LK-----KLGIKL 1309

//

Searching for complete domains in SMART
hrmpfam - search a single seq against HMM database
HMMER 2.1.1 (Dec 1998)
Copyright (c) 1992-1998 Washington University
School of Medicine
HMMER is freely distributed under the GNU General
Public License (GPL).

HMM file: /ddm/robison/smart/smart/smart.all.hmm
Sequence file: /prod/ddm/wspace/orfanal/oa-
script.16895.seq

Query: 14790

Scores for sequence family classification (score
includes all domains):

Model	Description	Score	E-value	N
serkin_6		184.2	2.2e-51	2
tyrkin_6		-40.3	2e-09	1

Parsed for domains:

Model	Domain	seq-f	seq-t	hmm-f	hmm-t
serkin_6	1/2	286	539..	1	231 []
serkin_6	2/2	590	1001..	1	231 []
tyrkin_6	1/1	590	1001..	1	280 []

Model	score	E-value
serkin_6	17.2	2.2e-11
serkin_6	166.8	3.5e-46
tyrkin_6	-40.3	2e-09

FIG. 7N



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Alignments of top-scoring domains:

serkin_6: domain 1 of 2, from 286 to 539: score 17.2, E = 2.2e-11

14790 286 *->Yellkk1GkGaFGkVylardkktgrlvAiKvi
+ + 1Gk Vy a ++ tg v +
IGSDEQLGK----LVYNALETATGGFV---LL 310

14790 311 k.....erilr
+ + + + + +++++++ ++ +++ + ++
YewvlqwqkkmgpfltsqekeskidkckqiqGTET 345

14790 346 EikiLkk.dHPNIVkLydVfed.....dklylVmE
E + L k HPN+V+++ + +++++ + + E
EFNSLVK1SHPNVVRYLAMNLKeqddsIVVDILVE 380

14790 381 yceGd1GdLf d1kkkrgrrglrkvlsE.earfyfr
+++G +L +l + g+ ++ ++ r+y++
HISG--VSLAAHLSHSGP-----IPVhQLRRYTA 407

14790 408 QilsaLeYLHsqgIiHRDLKPeNiLLds..hvKla
Q+ls+L+YLHs+ ++H L +N+L+d +++vK++
QLSGLDYLHSNSVVHKVLSASNVLVDAegTVKIT 442

14790 443 DFG1Arql.....ttfvGTpeYmAPEv1..
D +++++ + + + + t v +
DYSISKRLadickedvfeQTRV-----RFsd 468

14790 469gYgkpavDiWS1GcilyEl1tGkpPFpqld
+ + + gk + D+W 1G +1 1 G+
nalpyKTGK-KGDVWRLGLLLSSLSQGQE----C 497

14790 498 lifkkig....SpeakdLikk1LvkdPekRlta.e
+ + + + + d++kk+ + d ++R++ ++
GEYPVTIpsdlPADFQDFLKKCVCLDDKERWSPqQ 532

14790 533 aLedeldikaHPFF<-* SEQ. ID NO: 14
+L+ H f+
LLK-----HSFI 539



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serkin_6: domain 2 of 2, from 590 to 1001: score 166.8, E = 3.5e-46

<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">APPROVED</td> <td style="padding: 2px;">O.G. FIG.</td> <td style="padding: 2px;">SUBCLASS</td> </tr> <tr> <td style="padding: 2px;">BY</td> <td style="padding: 2px;">CLASS</td> <td style="padding: 2px;"></td> </tr> <tr> <td style="padding: 2px;">DRAFTSMAN</td> <td style="padding: 2px;"></td> <td style="padding: 2px;"></td> </tr> </table>	APPROVED	O.G. FIG.	SUBCLASS	BY	CLASS		DRAFTSMAN			<p style="margin: 0;">*->Yellkk1GkGaFGkVylardkktgr1vAiKvi +e l++1GkGaFG V ++++++k +g +A+K+i 14790 590 FEELQLLGKGAFGAVIKVQNKLDGCCYAVKRI 621</p> <p style="margin: 0;">k..... + ++ +++ ++ +++ + ++ ++++ + + 14790 622 Pinpasrqfrrikgevtllsrlhhenvryynawi 656</p> <p style="margin: 0;">..... ++++++ ++++++ ++++++ +++++ +++++ +++++ 14790 657 erherpagpgtpppdsgplakddraargqpasdtd 691</p> <p style="margin: 0;">..... + ++ + +++ + ++ + +++++++ + + + 14790 692 gldsveaaapppilsssviewstsgersasarfpat 726</p> <p style="margin: 0;">..... + ++ + +++ + ++ + +++++++ + + + 14790 727 gpgssddeddedehggvfsqsf1pasdsesdiif 761</p> <p style="margin: 0;">rirlrEikiLkk...dHPNIVkLydvfed.....d + + E + ++++++d+ +++++ + +++ + 14790 762 DNEDENSKSQNqdeDCNEKNGCHESEPSvtteavH 796</p> <p style="margin: 0;">klylVmEyceGdlGdLfllkkrrgrrglrkvlse. +ly+ mEyce +L+d +++ + + 14790 797 HLYIQMEYCEK--STLRDTIDQGLY-----RDTv 823</p> <p style="margin: 0;">earfyfrQilsaLeYLHsqqIiHRDLKPeNiLLds + +++fr+il++L+Y+H++g iHRDLKP Ni+Lds 14790 824 RLWRLFREILDGLAYIHEKGMIHRDLKPVNIFLDS 858</p> <p style="margin: 0;">..hvKlaDFG1Arql..... ++hvK++DFG1A+ + ++++++ + +++ 14790 859 ddHVKIGDFGLATDhlafsadskqddqtdliksd 893</p> <p style="margin: 0;">.....ttfvGTpeYmAPEvl.....gYgkpavDiW</p>
APPROVED	O.G. FIG.	SUBCLASS								
BY	CLASS									
DRAFTSMAN										

FIG. 7P



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++++ t +vGT Y++PEv +++++gY+ +vD
14790 894 psghlTGMVGTALYVSPEVQgstksAYNQ-KVDLF 927

SlGcilyElltGkpPFp..qldlifkkig.....
SlG+i++E+ + p ++ +++++++
14790 928 SLGIIFFEMSY-HPMVTasERIFVLNQLRdptspk 961

..... SpeakdLikk1LvkdPekRlta.eaL
+++ +++ k+ i+ 1L+ dP+kR+ta+e+L
14790 962 fpedfddgeHAKQKSVISWLLNHDPAKRPTATELL 996

edeldikaHPff<-* SEQ. ID NO: 15
+ + +
14790 997 K-----SELL 1001

tyrkin_6: domain 1 of 1, from 590 to 1001: score -
40.3, E = 2e-09

*->ltlgkklGeGaGFeVykGt1k...ieVAVKtL
+ ++ LG GaFG V k + k ++ AVK +
14790 590 FEELQLLGKGAFGAVIKVQNKldgCCYAVKRI 621

keda....keeFlrEakiMkk1GgkHpNiVkL1Gv
+ +++ + + E ++++++ +H+NiV+ + +
14790 622 PINPasrqFRRIKGEVTLLSRL--HHENIVRYYNA 654

cteegrrFmevePlmivmEymegGdLldyLrknp
+e
14790 655 WIE-----RHERP 662

k.....
++++++ +++++ +++++ +++++ ++ +
14790 663 Agpgtpppdsgplakddraargqpasdtgldsve 697

.....
+++ +++++ + + +++++ + + + ++++++
14790 698 aaappplssssvewstsgersasarfpatgpgssd 732

.....
++++++ +++++ + + +++++ +++++

FIG. 7Q

APPROVED	O.G. FIG.
BY	CLASS
CRAFTSMAN	SUBCLASS

14790 733 dedddedehggvfsqsflpasdsesdiifdneden 767

.....
++++++ +++++ +++++ +++ + +

14790 768 sksqnqdedcnekngchesepsvtteavhylyiqm 802

.....lslsdLlsfAlQIAkGMe
+ +++ +++ +++ + L I +G +

14790 803 eycekstlrtdtidqglyRDTVRLWRLFREILDGLA 837

YLesknfvHRDLAARNcLvgenkvvKIsDFGLsRd
Y+++k+ +HRDL N+ +++++ +vKI+DFGL+ d

14790 838 YIHEKGMIHRDLKPVNIFLDSDDHVKIGDFGLATD 872

lyddDkkG.....eskdyYrkkggkggktllPir.
+ ++ +++++ +d +++ +++ +++

14790 873 HLAFA-SADskqddQTGDLIKSDPSGHLTGMVGTAl 906

WmAPEs1..kdgkFtskSDVWSFGV1LWEiftlGe
+PE+ ++ ++ ++ k D +S G+ +E+

14790 907 YVSPEVQgsTKSAYNQKVDLFSLGIIFFEM---- 936

qPYpgeiqqfmsnee...vleylkkGyRlpkPend
Y + ++++++ v++l++ ++ Pe+

14790 937 -SYHPM----VTASErifVLNQLRDPTSPKFPED- 965

lpiSS.vtCPdelYd1M1qCWaedPedRptFsel.
++ + +++ +++++ ++dP++Rpt +el

14790 966 ----FdDGEHAKQKSVISWLLNHDPAKRPTATELL 996

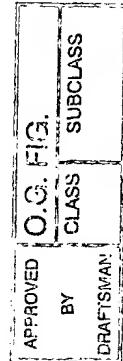
.verl<-* SEQ. ID NO: 16
+ e+1

14790 997 kSELL 1001



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ProDom Matches



ProdomId	Start	End	Description	Score
View Prodom 40346	18	323	p99.2 (2)001712(1) // INITIATION FACTOR KINASE EUKARYOCTIC-2 ALPHA EIF-2ALPHA	295
View Prodom 137719	19	1504	p99.2(1)074297_NEUCR// CPC3 PROTEIN	87
View Prodom I	341	1017	p99.2(2773)CC2(14) KK1T (14) KPC(13) //KINASE PROTEIN TRANSFERASE ATP-BINDING SERIN/THREOINE-PROTEIN PHOSPHORYLATION RECEPTOR TYROSINE-PROTEIN PRECURSOR TRANSMEMBRANE	107
View Prodom 150228	1105	1206	p99.2(1)074297_NEUCR// CPC3 PROTEIN	90
View Prodom 2305	1106	1230	p99.2(23)SYH(12) // SYNTHETASE AMINOACYL-TRNA HISTIDYL-TRNA PROTEIN LIGASE ATP-BINDING BIOSYNTHESIS HISTIDINE-- TRNA HISRS KINASE	137
View Prodom 42726	1274	1648	p99.2(2)0017121(1) 061651 (1) //INITIATION FACTOR KINASE EUKARYOTIC EIF-2 ALPHA EIF-2ALPHA	221

FIG. 7S



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View Prodom 40346

>40346 p99.2(2) 001712(1) 061651(1) //INITIATION
FACTOR KINASE EUKARYOTIC EIF-2 ALPHA EIF-2ALPHA
Length = 296

Score = 295(108.9 bits), Expect = 1.7e-28, Sum
P(2) = 1.7e-28 Identities = 58/144 (40%),
Positives = 95/144 (65%)

Query: 18 SYPQRQDHELQALEAIYGADFQDLRPDACPVKEP 52
S+ +RQ EL+ +++I+G D +DLRP A + +P

Sbjct: 9 SFRERQAQELEVIKSIFGCDVEDLRPQANPSLWKP 43

Query: 53 PEINLVLYP--QGLTGEEVYVKVDLRVKCPPTYPD 85
+I + L P G E YV L V CP YP

Sbjct: 44 TDIRIQLTPLRDSSNGLETYVCTKLHVTCP SKYPK 78

Query: 86 VVPEIELKNAKGLSNESVNLLKSRLEELAKKHCGE 120
+ P+I L+ +KG+S++ + L+++L+ +++ GE

Sbjct: 79 LPPKISLEESKGMSDQLLEALRNQLQAQSQELRGE 113

FIG. 7T



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Query: 121 VMIFELAYHVQSFLEHNKPPPKSFHEEMLERAQ 154
VMI+ELA VQ+FL EHNKPP SF+++ML+ + +
Sbjct: 114 VMIYELAQTVQAFLLEHNKPPKGSFYDQMLQDKQK 148

Query: 155 EEEQQ 159
+Q+
Sbjct: 149 RDQE 152 SEQ. ID NO: 17

Score = 63 (27.2 bits), Expect = 1.7e-28, Sum P(2)
= 1.7e = 28 Identities = 15/59 (25%), Positives =
30/59 (50%)

Query: 266 EILYFN-MGSPDQLMVHKKGKCIGSDEQLGKLVYNA 299
E LYF+ MG + +G C+G ++ G + Y
Sbjct: 230 ETLYFHKMGR----QIQRGCCCCVGHHSQR-GCIAVTG 259

Query: 300 LETATGGFVLLYEWVLQWQKKMGP 323
++ G + + EW +++ + P
Sbjct: 260 IDMHCQQLLYITEW?IKYSQLEQP 283
↑SEQ. ID NO: 18

View Prodom 42726

>42726 p99.2(2) 001712(1) 061651(1) //INITIATION
FACTOR KINASE EUKARYOTIC EIF-2 ALPHA EIF-2ALPHA
Length =469

Score = 221 (82.9 bits), Expect = 7.5e-15, P =
7.5e-15 Identities = 92/341 (26%), Positives
160/341 (45%)

fig 7i

Query: 1274 INSLIKQKTGIAQLVKYGLKDLEXXXXXXXXX 1306
+ SL++ K A L + L++LE
Sbjct: 70 LKSLMRGKGEAASLARGALRELETVVGLAYSLG 102

Query: 1307 XXXXXXXNLGLVYKVQQ--HNGIIIFQFVAFIKR 1337
GL + + GI++Q A +K
Sbjct: 103 VKCPIHIWAGLPISFDRASNGGIVWQMTADLKP 135

FIG. 7U



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Query: 1338 RQRAVPEILAAGGRYDLLIPQF-RGPQALGPVP 1369
+ P +LA G RYD ++ +F + Q P

Sbjct: 136 NRSGHPSVLAIGERYDSMLHEFQKQAQKFNPAM 168

Query: 1370 TAIGV-----SIAIDKISAALVNMEESVTI 1396
A GV + ++DK+ AAV +E + +

Sbjct: 169 PARGVLSGAGLTFSLDKLVAAV-GVEYAKDCRA 200

Query: 1397 CDLLVVSVGQMSMSRAINLTQKL-WTAGITAEI 1428
D+ + G + + +L W+ GI I

Sbjct: 201 IDVGICVCGTRPPLKDVTYIMRLLWSVGIRCGI 233

Query: 1429 MYDWSQSQEELQEYCRHHEITYVALVSDKEGSH 1461
+ S+ +E Q+ R + +V LV++ GS

Sbjct: 234 VEAASELGDEAQDLARLGAL-HVILVAEN-GS- 263

Query: 1462 VKVKSFEKERQTEKRVLETELVDHVLQKLRTKV 1494
++V+SFE+ER E+ + TELV+ + + LR+

Sbjct: 264 LRVRSFERERFQERHLTRTELVEFIQKMLRS-- 294

Query: 1495 TDERNGREASDNLAVQNLKGFSNAS----- 1520
D NG DN + + GS N S

Sbjct: 295 -DGLNGTTV-DNFSHLSALGSGDNRSSGGKERE 325

Query: 1521 ----GLF-EIGHATV-----VPIVSV--LAPE 1540
GL AT+ +P + V L +

Sbjct: 326 RGENGLSTSASNATIKNNYSQLPNLQVTFLTHD 358

Query: 1541 KLSASTRRRYETQVQTRLQTSANLHQKSSEIE 1573
K +A+ +RR E QV ++ ++L+ +K + +

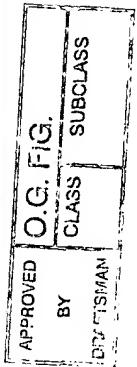
Sbjct: 359 KPTANYKRRLENQVAQQMSSTLSQFLKKETFV- 390

Query: 1574 ILAVDLPKETI 1584
+L V+LP +

Sbjct: 391 VLVVELPPAVV 401 SEQ. ID NO: 19

Score = 150 (57.9 bits), Except = 4.2e-07, P =
4.2e-07 Identities = 66/300 (22%), Positives =
137/300 (45%)

FIG. 7V





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Query: 1368 VPTAIGVSIAIDKISAAVLNMEESVTISSLCDLL 1400
 V + G++ ++DK+ AAV +E + + D+
 Sbjct: 173 VLSGAGLTFSLDKLVAAV-GVEYAKDCRAIDVVG 204

Query: 1401 VVSVGQMSMSRAINLTQKL-WTAGITAEIMYDW 1432
 + G + + +L W+ GI I+
 Sbjct: 205 ICVCGTRPPLKDVTYIMRLLWSVGIRCGIVEAA 237

Query: 1433 SQSQEELQEYCRHHEITYVALVSDKEGSHVKVK 1465
 S+ +E Q+ R + +V LV++ V+
 Sbjct: 238 SELGDEAQDLARLGAL-HVILVAENGSLRVRSF 269

Query: 1466 SFEK--ERQTEKRVLETTELVDHVLQK--LRTKV 1494
 E+ ER + L E + +L+ L
 Sbjct: 270 ERERFQERHLTRTEL-VEFIQKMLRSDGLNGTT 301

Query: 1495 TDERNGREAAA-SDNLAV-----QLKGFSN 1518
 D + A DN + + G ++
 Sbjct: 302 VDNFSHLSALGSGDNRSSGGKERERGENGLSTS 334

Query: 1519 ASGLFEIHGATVVPIVSV--LAPEKLSASTRRR 1549
 AS + + +P + V L +K +A+ +RR
 Sbjct: 335 ASNATIKNNYSQLPNLQVTFLTHDKPTANYKRR 367

Query: 1550 YETQVQTRLQTSLANLHQKSSEIEILAVDLPKE 1582
 E QV ++ ++L+ +K + + +L V+LP
 Sbjct: 368 LENQVAQQMSSTLSQFLKKETFV-VLVVELPPA 399

Query: 1583 TILQFLSL--EWDADEQAFNTTVKQLLSRLPK- 1612
 + + + + ++ + ++ R K
 Sbjct: 400 VVNAIVGAINPREIRKRETEPEINYVIERFSKY 432

Query: 1613 QRYLKLVCDEIYNIKVEKKVSVLFLYSYRDDYY 1645
 +RY+ + +E+ + + K ++ LYS D YY
 Sbjct: 433 KRYISEINEEVVDYLSDAKTPIVALYSISDSYY 465

Query: 1646 RIL 1648
 R++
 Sbjct: 466 RVI 468 SEQ. ID NO: 20

FIG. 7W



48/53

View Prodom 2305

>2305 p99.2 (23) SYH(12) // SYNTHETASE AMINOACYL-
TRNA HISTIDYL-TRNA PROTEIN LIGASE ATP-BINDING
BIOSYNTHESIS HISTIDINE--TRNA HISRS KINASE Length =
145

Score = 137 (53.3 bits), Expect = 3.9e-08, P =
3.9e-08 Identities = 41/131 (31%), Positives =
62/131 (47%)

Query: 1106 DHSGMLVMLPFDLRIPTFARYVARNNI----LNL 1134
D G L+ L +DL +PFARYVA N + L L

Sbjct: 18 DQGGELLSLRYDLTVPFARYVAMNLLKVTNLPL 50

Query: 1135 KRYCIERVFRPRK--LDRFHPKELLECAFDIVT 1165
KRY I +V+R + + R +E +C FDI+

Sbjct: 51 KRYHIAKVYRRDRPAMTRGRYREFYQCDFDII- 82

Query: 1166 STTNSFLPXXXXXXXXXXXXXXQEFPALQERNYSI 1198
++ P + + N+ I

Sbjct: 83 GEYDTMAPDAEILKILTEILSQLGIRELGNFKI 115

Query: 1199 YLNHTMLLKAILLHCGIPEDKLSQVYIILYDA 1230
+NH +L ++L P K Q Y+ Y A

Sbjct: 116 KINHRGILDSSLQ----PWPKTLQEYLTQYKA 143
SEQ. ID NO: 21

View Prodom 1

>1 p99.2 (2773) CC2(14) KK1T(14) KPC1(13) //KINASE
PROTEIN TRANSFERASE ATP-BINDING SERINE/THERONINE-
PROTEIN PHOSPHORYLATION RECEPTOR TYROSINE-PROTEIN
PRECURSOR TRANSMEMBRANE Length = 431

Score = 107 (42.7 bits), Expect = 0.0032, Sum P(2)
= 0.0032 Identities = 36/106 (33%), Positives =
50/106 (47%)



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Query: 848 DLKPVNIFLDSDDH-----VK-IGDFGLATDHLA 875
DLKP NI LD + H +K I DFGLA +
Sbjct: 220 DLKPENILLDEESHENTPNMIKLIADFGLAKE--I 253

Query: 876 FSADSKQDDQTGDLIKSDPSGHLTGMVGTALYVS- 909
+S+ S ++ + + M GT YVS
Sbjct: 254 YSSSSTYEEMSSSQAVFGSHQTTSTMCGTPYYVSM 288

Query: 910 ----PEVQGSTKSA-----YNQKVDLFSLGIIFFE 935
PE SA Y+ K D++S G+I +E
Sbjct: 289 KSMAPEYMAPESSATNYQKYSTKSDVWSFGVILYE 323

Query: 936 M 936

M

Sbjct: 323 M 323 SEQ.ID NO: 22

Score = 105 (42.0 bits), Expect = 3.5e-05 Sum
 $P(3)=3.5e-05$ Identities = 35/102 (34%), Positives
= 48/102 (47%)

Query: 824 RLWRLFREILDGLAYIHEK-----GMIHR----DL 849
+L +I GL Y+H K G+IHR DL
Sbjct: 187 QLMHYVHQIAKGLEYLHSKNQKHQGIIHRAKKVDL 221

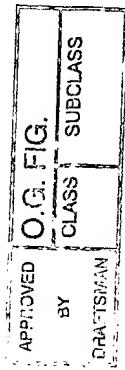
Query: 850 KPVNIFLDSDDH-----VK-IGDFGLATDHLA 877
KP NI LD + H +K I DFGLA + +S
Sbjct: 222 KPENILLDEESHENTPNMIKLIADFGLAKE--IYS 254

Query: 878 ADSKQDDQTGDLIKSDPSGHLTGMVGTALYVS 909
+ S ++ + + M GT YVS
Sbjct: 255 SSSTYEEMSSSQAVFGSHQTTSTMCGTPYYVS 286
!SEQ.ID NO: 23

Score = 74 (31.1 bits), Expect = 0.91, Sum $P(2) = 0.60$ Identities = 30/127 (23%), Positives = 60/127 (47%)

Query: 341 QGTETEFNSLVKLSHPNVVRYLAMNLKEQDDSI 375
+G+ E+ + + ++ L++ + +++
Sbjct: 134 EGSLVEYMEYMSGSEDYMKKLSLETVMKIAMMIL 168

FIG. 7Y





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Query: 376 DIL-VEHISGVSLAAHLSHSGPIPVLQLRRYTAQL 409
+ + H+S S + LSHS QL Y Q+
Sbjct: 169 QFMQIMHMSSESES--LSHS-----QLMHYVHQI 195

Query: 410 LSGLDYLHSNS-----VVHKV----LSASNVLVDA 435
GL+YLHS + ++H+ L N+L+D
Sbjct: 196 AKGLEYLHSKNQKHQGIIHRAKKVDLKPENILLDE 230

Query: 436 EG-----TVK-ITDYSISKRL 450
E +K I D+ ++K +
Sbjct: 231 ESHENTPNMIKLIADFGLAKEI 252
†SEQ.ID NO: 24

Score = 65 (27.9 bits), Expect = 3.5e-05, Sum P(3) = 3.5e-05
Identities = 29/124 (23%), Positives = 50/124 (40%)

Query: 907 YVSPEVQGSTKSAYNQKVDSLGLIFFEM-SYHP 940
Y++PE + Y+ K D++S G+I +EM + P
Sbjct: 294 YMAPESSATNYQKYSTKSDVWSFGVILYEMLTGKP 328

Query: 941 MVTASERIFVLNQLRDPTSPKFPEDFDDGEHAKQK 975
E +++ S K E + G +
Sbjct: 329 PFFPGES--EVSEEEPYQSMKNMEVLEMGPEETIQ 361

Query: 976 SVISWLLNHDPAKRPT-----ATELLKS 998
V+S ++ + P A +LLK
Sbjct: 362 KVMSKIVEKKGERMPQPSSNCPEVSQEAKEADLLKK 396

Query: 999 ELLPPPQMEESELHEVLHH 1017
L P+ E+L H
Sbjct: 397 CLQKDPEKRRPTFEEILQH 415 SEQ.ID NO: 25

Score = 55 (24.4 bits), Expect 3.5e-05, Sum P(3) = 3.5e-05
Identities = 12/23 (52%), Positives 18/23 (78%)

Query: 589 EFEELQ-LLGKGAFGAVIKVQNK 610
++E L+ LLGKG+FG V K ++K
Sbjct: 33 QYELLKKLLGKGSGFKVYKAKHK 55
†SEQ.ID NO: 26

FIG. 7Z

APPROVED	O.G. FIG.
BY	CLASS
DRAFTSMAN	SUBCLASS



51/53

Score = 49 (22.3 bits), Expect 34., Sum P(2) = 1.0
Identities = 12/39 (30%), Positives = 24/39 (61%)

Query: 507 DLPADFQDFLKKCVCLD-DKERWSPQQLLKHS-FI 539
++ + +D LKKC+ D +K R + +++L+H F+
Sbjct: 385 EVSQEAKDLLKKCLQKDPEKRRPTFEEILQHPWFL 419

Query: 540 NPQP 543
P

Sbjct: 420 MRNP 423 SEQ.ID NO: 27

Score = 40 (19.1 bits), Expect = 0.0010, Sum P(3) = 0.0010
Identities = 8/11 (72%), Positives = 9/11 (81%)

Query: 596 LGKGAFGAVIK 606
LG G+FGAV K

Sbjct: 2 LGTGSFGAVYK 12 SEQ.ID NO: 28

View Prodom 150228

>150228 p99.2 (1) 074297_NEUCR //CPC3 PROTEIN
Length = 108

Score = 90 (36.7 bits), Expect = 0.0039, P = 0.0039
Identities = 32/105 (30%), Positives = 43/105 (40%)

Query: 1105 MDHSGMLVMLPFDLRIPFARYVAR--NNILN 1133
+D +G ++ LPFDL + AR +AR N+ +
Sbjct: 3 LDQNGTQLQLPFDLMMGHARSLARITNSPVV 33

Query: 1134 LKRYCIERVFRPRKLDRFHPKELLECAFDIVT 1165
K Y +FR R P E FDIVT
Sbjct: 35 QKSYSFGNIFRDRH-GGGQPDVYGEVDFDIVP 65

Query: 1166 STTNSF-LPXXXXXXXXXXXXQEFPALQERNY 1196

FIG. 7A1



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S L FP +
Sbjct: 66 SDALDLALKEAEVIKVLDEIATAFPTVSSTPI 97

Query: 1197 SIYLNHTMLL 1206

L H+ LL

Sbjct: 97 CFQLGHSDLL 106 SEQ.ID NO: 29

View Prodom 13771

>137719 p99.2(1) 074297_NUCR //CPC3 PROTEIN Length = 304

Score = 87 (35.7 bits), Expect 0.61, Sum P(2) = (0.45) Identities=41/146 (26%), Positives = 64/156 (41%)

Query: 19 YPQRQDHELQALEAIYGA~~D~~QDLRPDACP~~V~~PVKEPP 53
Y + Q+ E+ L+AIYG DF K P

Sbjct: 44 YQEVQESEVMVLQAIYGEDFTQHEAAHGAWQKSEP 78

Query: 54 EINLVLYPQGLTGE~~E~~VYVKV~~D~~LRVKCPPTYPDVVP 88
++ + P + +E+ V L V TYP P

Sbjct: 79 RFDIKIKPS--SDQEL--SVT~~L~~GVVMVATYPKTPP 109

Query: 89 EIELKNAKGLSNESVNLLKSRLEELAKK---HC~~G~~E 120
+ +K+ L ES + E K +

Sbjct: 110 LLTIKDDHSL-RESTKF~~K~~IQKF~~V~~ETQPKIY~~A~~QAEQ 143

Query: 121 VMIFELAYHVQ~~S~~FLSE--HN~~K~~----PP---PKS 144
MI ++ ++ L E K P ++

Sbjct: 144 EMIDQIVEGIRDILEEAAQKKVQGLEIPSLEEEERA 178

Query: 145 FHEEMLERRAQEEQQR 160
HE L R AQ E++R

Sbjct: 179 AHEAELARLAQSEKER 194 SEQ.ID NO: 30

Score = 49 (22.3 bits), Expect =0.61, Sum P(2) = 0.45 Identities = 13/48 (27%), Positives = 27/48 (56%)



53/53

Query: 1458 EGSHVVKVKSFEKERQTEKRVLETELVDHVL 1487
E ++ EKER+ K++ E++ + VL
Sbjct: 181 EAEALARLAQSEKEREERKKLEESKEEERVL 210

Query: 1488 QK-LRTKVTDERNGREAS 1504
+ L+ ++ +RN + S
Sbjct: 211 EDMLQEELKRQRNKAES 228 SEQ.ID NO: 31

Score = 49 (22.3 bits), Expect = 0.61, Sum P(2) =
0.45 Identities = 13/48 (27%), Positives = 27/48
(56%)

Query: 238 KHRANSSGRSRRERQYSVCNSEDSPGSC-EIL 268
+++A S + R Q S + PG E L
Sbjct: 222 RNKAKESRKKNRSHQLSPDRAPQDPGETDETL 253

Query: 269 YFNMGSPDQLMVHKGKCIGSDEQLGKLVY 297
F+ P ++ G + +GK V+
Sbjct: 254 MFDQ--PCKITDGSGNALFFQTVIGKTVF 280
SEQ.ID NO: 32

Score = 47 (21.6 bits), Expect = 0.96, Sum P(2) =
0.62 Identities = 19/83 (22%), Positives = 33/83
(39%)

Query: 750 LPASDSESDIIIFDNEDENSKSQ-NQDEDCCNEKNGC 783
L S E ++ D E K Q N+ ++ +KN
Sbjct: 200 LEESKEEERVLEDMLQEELKQRQRNYAKESRKKNR 234

Query: 784 HESEPSVTTEAVHYLYIQMEYCEKSTLRDTIDQGL 818
H+ P + + + + D L
Sbjct: 235 HQLSPDRAPQDPGETDETLMDQPCKITDGSGNAL 269

Query: 819 YRDTVRLWRLFRE 831
+ TV +FRE
Sbjct: 270 FFQTVIGKTVFRE 282 SEQ.ID NO: 33

APPROVED	O.G. FIG.
BY	SUBCLASS
DRAFTSMAN	CLASS